Becker Pond Dam Removal
Mt. Washington, MA

EEA File #16226
Single Environmental Impact Report

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Mt Washington, MA
SEIR - EEA File #16226

Single Environmental Impact Report (SEIR)

Attachemnt A – MEPA History: Previous MEPA Submissions

Attachment B – Annotated copy of Secretary's Certificate & Comments Received in response to EENF (July 31, 2020)

Attachment C – Locus Map & Site Plans

Attachment D – Inter-Fluve Revised 75% Design Report (May 2020, Revised September 2020)

Attachment E – Construction Best Management Practices (BMPs)

Attachment F – NHESP Consultation

Attachment G – Historic and Cultural Consultation

GLOSSARY OF ACRONYMS

ACEC	Area of Critical Environmental Concern
ACOE	United States Army Corps of Engineers
AR	American Rivers
AT	Appalachian Trail
ATC	Appalachian Trail Conservancy
Bank	Inland Bank, as defined by Massachusetts Wetlands Protection Act
BLSF	Bordering Land Subject to Flooding, as defined by Massachusetts Wetlands Protection Act
BMPs	Best Management Practices
BRPC	Berkshire Regional Planning Commission
BSC	BSC Group, Inc.
BUAR	Board of Underwater Archaeological Resources
BVW	Bordering Vegetated Wetlands, as defined by Massachusetts Wetlands Protection Act
CMR	Code of Massachusetts Regulations
COP	Construction Operations Plan
CWA	Clean Water Act, federal
cy	cubic yards
DAR	Department of Agricultural Resources
DCR	Massachusetts Department of Conservation and Recreation
DER	Massachusetts Division of Ecological Restoration
DFA	Department of Food and Agriculture
DFW	Massachusetts Division of Fisheries and Wildlife
ED	Eleanor Dawson
EENF	Expanded Environmental Notification Form
EIR	Environmental Impact Report, per Massachusetts Environmental Policy Act (MEPA) regulations
FEMA	Federal Emergency Management Agency
ft	feet
GHG	Greenhouse Gas Emission
HVA	Housatonic Valley Association
ILSF	Isolated Land Subject to Flooding, as defined by Massachusetts Wetlands Protection Act
lf	linear feet
LUW	Land Under Waterbodies and Waterways, as defined by Massachusetts Wetlands Protection Act
M.G.L	General laws of Massachusetts
MACRIS	Massachusetts Historical Commission’s Massachusetts Cultural Resources Inventory System
MassDEP	Massachusetts Department of Environmental Protection
MassDOT	Massachusetts Department of Transportation
MEPA	Massachusetts Environmental Policy Act 301 CMR 11.00, as administered through Massachusetts Executive Office for Energy and Environmental Affairs
MESA	Massachusetts Endangered Species Act, as administered by Natural Heritage Endangered Species Program
MHC	Massachusetts Historical Commission
NHESP	Natural Heritage and Endangered Species Program
NOI	Notice of Intent
OOC	Order of Conditions
SEIR	Single Environmental Impact Report
sf	square feet
SWPPP	Stormwater Pollution Prevention Plan
TD	Ted Dombrowski
TMW	Town of Mount Washington - Select Board
TNC	The Nature Conservancy
TU	Trout Unlimited
USGS	United States Geological Survey
WPA	Wetlands Protection Act: G.L. c. 131, §40 and implementing regulations (310 CMR 10.00)
WQC	Water Quality Certification

1 PROJECT MEPA DOCUMENTS

Please see **Appendix A** for copies of relevant documents previously issued in compliance with the Massachusetts Environmental Protection Act (MEPA) process for this proposed Project, consisting of the following:

- the EENF for the Project, issued in May 29, 2020
- the Secretary's Certificate on the EENF for the Project, issued on July 31, 2020 (Theoharides, 2020)
- a document submitted to the MEPA Office in response to a request from MEPA staff for additional information to support the EENF, dated July 2, 2020 (Inter-Fluve, 2020a)

Appendix B contains an annotated copy of the EENF Certificate, and associated letters received in response to the EENF. Responses to these letters are provided in Section 10 of this narrative, and are referenced by the comment number shown on the annotated document in **Appendix B**.

2 SUMMARY

2.1 Brief Project Description

The Becker Pond Dam Removal project (the Project), EEA #16226, is located in Mt. Washington, MA, which is within the Housatonic River watershed and the Schenob Brook Drainage Basin Area of Critical Environmental Concern (ACEC). The dam and the surrounding forested property are part of the 800-acre Mount Plantain Preserve, owned by The Nature Conservancy (TNC). The dam is located on an unnamed brook in a relatively remote area and is the only known man-made obstruction on this otherwise free-flowing brook. The impoundment created by the dam is known as Becker Pond and covers an area of approximately 0.65 acres. The dam is composed of a 95-foot long earthen embankment and concrete core wall, and is not under jurisdiction of the Massachusetts Office of Dam Safety (Fuss & O'Neill, 2016). Upstream from the dam, the brook is part of a marsh wetland system. Downstream of the dam, the brook flows in a southerly direction with an increasing gradient, including about a mile within a relatively narrow valley known as Sages Ravine. Thereafter, the brook returns to a lower gradient and continues to flow in a more easterly direction, eventually discharging to Schenob Brook, which is a tributary of the Housatonic River.

According to its last inspection, the concrete dam is currently in poor condition with several critical safety and structural issues. The primary goals of the Project are restoring riverine aquatic and hydrologic connectivity through the site, restoring habitat for brook trout, and eliminating the safety hazard posed by the dam. TNC and its partners seek to implement a simple, low-cost solution to meet these stream restoration and safety goals.

2.2 Project Changes since the EENF

In the EENF submitted in May of 2020, the project was proposed as dam removal followed by passive transport of the sediments accumulated behind the dam into the downstream river system. In response to comments received during the EENF review process (Theoharides, 2020), the proposed project was modified to consist of dam removal, and excavation of a pilot channel in the sediments behind the dam. This approach was labeled as Alternative 4 and was adopted to minimize the natural transport of sediment from the impoundment into the downstream river stream system, thereby minimizing potential impacts to downstream resources, including Sages Ravine. The design plans have since been updated to reflect this change in approach (**Appendix C** Site Plans).

Additionally, since the EENF was submitted, the preferred access road alternative has been confirmed. The proponent seeks to use an access road that is entirely within TNC property (described as Access Entrance Alternative 2 in previous project-related documents). This alternative requires constructing a section of new access road that will join the existing access road approximately 700 linear feet from East Street. The new section of access will also include a staging area at the East Street entrance. At the location of the access point and staging area, East Street is a well-maintained gravel road owned by the Town. The road is closed during the winter season and snow removal is not provided. Once the Project is complete, TNC intends to convert the access road to a permanent pedestrian-only trail, reducing the construction width and using native plantings and/or seeding to restore disturbed areas. Please refer to the Site Plans in **Appendix C** and revised Becker Pond Dam Removal 75% Design Report in **Appendix D** for further details on the access road, as well as the information contained in the subsequent sections of this Single Environmental Impact Report (SEIR.

2.3 Required Permits and Other Legal Instruments

The following is a list of the Project's required Permits and other legal instruments, which are all described in greater detail below, in *Section 7*. Note that this document is produced in compliance with the MEPA regulations and guidance. No applications for permits have been submitted to date.

Permits:

- MEPA review and a mandatory EIR
- Section 401 Water Quality Certification (WQC) – Massachusetts Department of Environmental Protection (MassDEP)
- Chapter 91 (c.91) Permit - MassDEP
- Order of Conditions from the Mt. Washington Conservation Commission
- Permit for the construction of a driveway or road abutting or intersecting a public way (Mount Washington Zoning Bylaw §215-22) – Mt. Washington Board of Selectmen
- Section 404 authorization – United States Army Corps of Engineers (USACE)
- Stormwater Pollution Prevention Plan (SWPPP) and eNOI for construction stormwater

Funding:

- State Financial Assistance from the Commonwealth, through the Massachusetts Division of Ecological Restoration (DER)
- State Financial Assistance from the Commonwealth, through the Massachusetts Environmental Trust

Other Legal Instruments:

- Land transfers are not required for the Project, which lies wholly within property owned by the proponent, TNC.

2.4 Summary of Project Alternatives

Five alternatives were considered for this project and are presented in detail in Section 3. The five alternatives consist of:

- **Alternative 1 - No Build/No-Action:** The No-Action alternative would preserve the shallow impoundment environment and eliminate the cost of dam removal and stream restoration but does not achieve the project goals.

- **Alternative 2 – Full Dam Removal with Passive Downstream Sediment Release:** This alternative would fully remove the dam and allow a stream channel to reform within the footprint of the pond and sediments in the impoundment to mobilize naturally.

- **Alternative 3 – Full Dam Removal with Full Mobile Sediment Removal:** This alternative would fully remove the dam, as well as all the accumulated sediments present in the impoundment through excavation, dewatering, and off-site hauling.

- **Alternative 4 – Full Dam Removal with Partial Mobile Sediment Removal (Preferred Alternative):** This alternative would remove the full vertical and lateral extent of the dam, and about 1/3 of the sediments present in the impoundment, associated with the creation of a pilot channel.

- **Alternative 5 – Dam Repair:** This alternative would repair the dam to meet current safety standards and has little potential for downstream sedimentation impacts, but it does not restore ecological function, and would be costly to complete, particularly when taking into account on-going monitoring and maintenance of the dam to ensure safe conditions are maintained.

2.5 Summary of Potential Environmental Impacts

The Project is being designed and implemented to provide a benefit to public safety and the ecological function of the Schenob Brook Watershed. As such, the long-term impacts of the Project are beneficial, and negative impacts are temporary, primarily related dam removal activities, construction of the access road/pedestrian trail, and the natural redistribution of sediments after dam removal. The Project is supported by the MassDEP and the DER, in recognition of its positive effects on environmental function.

Short-term impacts associated with the natural re-distribution of sediments after dam removal will occur, but will attenuate naturally over time (Bednarek, 2001; Magilligan et al., 2016; Stanley et al., 2002; Tullos et al., 2014). As seen in dozens of other successful dam removal projects in Massachusetts over the last 15 years, this includes the following:

- Temporary, short-term pulses of suspended sediments moving down stream.
- Sediment accumulation in slow-water stream sections and pools.
- Temporary impacts (typically less than 2 years) to invertebrate assemblages due to sediment accumulation.
- Temporary impacts (typically less than 1 year) to fish assemblages, behavior, and distribution due to suspended sediments.

Short-term impacts associated with the construction activities during dam removal may also occur, but will be avoided, minimized, and mitigated to the maximum extent practicable, as described below (*Sections 2.6, 8, and 9*). These potential impacts include the following:

- Construction related erosion and sedimentation in upland areas.
- Stormwater related run-off into the stream due to construction-related erosion.
- Removal of vegetation.

- Noise, dust, and odors due to construction activities.
- Spills and leaks of fuel.
- Diesel emissions from heavy construction equipment
- Temporary increase in traffic on local public roads

2.6 List of Proposed Mitigation Measures

The Project is designed to provide a benefit to public safety and the ecological function of the Schenob Brook Watershed. As a pro-active habitat restoration project with many environmental benefits and limited short-term impacts, no mitigation for the conversion/loss of habitat associated with the Project itself is warranted or provided. Mitigation for short-term construction related impacts is proposed and described in *Sections 8 and 9*.

Short-term impacts associated with the natural re-distribution of sediments after dam removal will occur, and will attenuate naturally, as the restored stream system reaches equilibrium. The Preferred Alternative was chosen to minimize the potential for these impacts through creation of a pilot channel that will require partial removal of impoundment sediments.

Short-term impacts associated with construction activities may occur, and actions to avoid, minimize, and mitigate these impacts will be incorporated into construction activities. The design of these measures will be part of the permitting process, and they will comply with all Local, State and Federal permit conditions, as described in *Section 9*. These measures will include site-specific water management, concrete removal, and sediment dewatering plans developed in consultation with DER and MassDEP to minimize impacts, in addition to typical permit mitigation conditions, including the following:

- Install, inspect, and maintain erosion and sediment controls and other applicable construction BMPs to minimize the potential for erosion and sedimentation.
- Keep stockpiled materials outside of wetland resource areas and Buffer Zones.
- Backfill any excavations as work is completed.
- Limit equipment access to designated access roads and work areas, which will be appropriately stabilized and monitored.
- Located staging areas within upland areas, well away from wetland resource areas and their buffer zones. Staging areas will be surrounded by appropriate sediment controls.
- Where possible, refueling of vehicles and equipment will be conducted in a designated staging area, away from wetland resources. If this is not possible, appropriate containment will be used to ensure no hazardous materials enter the environment.
- Stabilize and restore all temporarily disturbed areas, in accordance with the requirements of the Wetlands Protection Act (WPA) and other applicable regulations.
- All vehicles will be equipped with spill release kits.
- All construction and demolition activities will conform to current Air Pollution Control Regulations. Measures to alleviate dust, noise, and odor nuisance conditions that may occur during the construction and demolition activities will be implements, if needed.
- Any hazardous materials encountered or generated on site will be properly contained and disposed of off-site.
- Once construction is complete, the temporary access road will be converted into a pedestrian trail. The access road will be narrowed, and the margins planted and seeded with native plant species.

Additional details of typical mitigation measures and Best Management Practices (BMPs) for dam removal projects have been provided by the project's design engineer, Inter-Fluve, Inc., and are provided in **Appendix E.**

3 PROJECT ALTERNATIVES

In this section, the five Project Alternatives that were considered are compared. As required by 301 Mass. Reg. 11.07, the range of Projects considered includes the no-build option. Note that the Preferred Alternative is described in additional detail in Section 4.

3.1 Alternative 1: No-Build/No-Action Alternative

The No-Action Alternative would leave the dam in place, but not include repairs or other actions to address the dam's safety deficiencies. This alternative would preserve the shallow impoundment environment, which would continue to fill in with sediment over time and eliminate the cost of dam removal and stream restoration. However, this alternative would continue the long history of passage constraints for aquatic organisms and continued deposition of sediment and organic material within the impoundment. The No-action Alternative would also continue to pose a safety risk due to the structural deficiencies of the dam. Under a potential future catastrophic failure of the dam, the impacts to stream species and habitats would likely be more severe than the controlled removal of the dam under other alternatives, as well as create a human safety risk to downstream areas. Dam removal and the associated restoration of stream functions and reduction in safety hazards are the primary goals of this proposed project. Therefore, the No-Action alternative would not serve the Project's purpose and was dismissed.

3.2 Alternative 2: Full Dam Removal with Passive Downstream Release of Impounded Sediment

Alternative 2 would restore the shallow impoundment behind the dam to a free-flowing stream with an overbank floodplain and areas of bordering wetland. This alternative includes the removal of the full vertical and lateral extent of the dam and restoration of the adjacent side slopes and channel in the footprint of the dam. With this alternative, approximately 550 cubic yards (cy) of impounded sediment would be passively released downstream following dam removal. This is the estimated sediment volume that would be mobilized through natural channel-forming processes shortly after dam removal. This amount represents approximately one-third of the estimated total sediment behind the dam (~1,500 cy). Storm events or other stochastic perturbations may mobilize additional material over time. The mobilized sediments would supplement sediment-starved reaches of the stream and Schenob Brook, with finer-grained materials being mobilized well downstream. The restored stream channel at the dam would be expected to match the step-pool-riffle structure of the stream observed downstream (Inter-Fluve, 2020b).

The concrete from the dam would be removed to an off-site facility to be recycled, and disturbed side slopes would be stabilized with biodegradable fabric. Based on experience with similar projects, the organic nature of the sediments, and abundant seed sources from within the surrounding forest and upstream headwater wetlands, the former impoundment is expected to revegetate naturally, without need for seeding (Inter-Fluve, 2020b).

Alternative 2 meets the Projects goals, and of the Alternatives that require construction, has the lowest implementation cost, requires disturbing the least amount of upland at the dam and impoundment, and provides the maximum amount of sediment to the downstream system. Although there are ecological benefits to a more natural level of sedimentation throughout the stream, Alternative 2 carries a risk of temporarily high levels of sediment transport and deposition within Sages Ravine during the period when the accumulated sediments are released from the Becker Pond impoundment (Inter-Fluve, 2020b). As such, it has been removed from consideration as the Preferred Alternative.

3.3 Alternative 3: Full Dam Removal with Full Removal of Impounded Sediments

Alternative 3 would restore the impoundment to a free-flowing stream with areas of bordering wetlands and floodplain through the same level of dam removal described above for Alternative 2. Alternative 3 would also include mechanical removal of the estimated total 1,500 cy of accumulated sediment present in the impoundment. A portion of the excavated sediments could be re-used for shaping and grading on-site, but most would need to be dewatered and hauled off-site for disposal (Inter-Fluve, 2020b).

Complete sediment removal is technically feasible and would minimize potential impacts to downstream receiving areas such as Sages Ravine. However, this alternative would require extensive water control to re-route the stream during construction and then excavate and haul out the sediment. To be safely transported, the large volume of sediment removed would need to be dewatered, which would require a relatively large cleared and level space within the upland area, which is within Natural Heritage and Endangered Species Program (NHESP) Priority Habitat. In total, the activities associated with shaping and grading, water control, and sediment dewatering and hauling, would require limits of disturbance substantially greater than the footprint of the excavated channel. Off-site hauling of sediments would require approximately 100 dump truck loads (based on an approximate load size of 15 cy of dry sediment for a typical tri-axle dump truck), which could cause substantial wear and tear to both the access road and to East Street, which is unpaved in the vicinity of the site. Finally, because the natural sediments and existing seed bank would be removed, Alternative 3 would involve extensive seeding and revegetation of the former impoundment, with associated monitoring and maintenance, and the increased risk of invasive species establishment (Inter-Fluve, 2020b).

Alternative 3 would meet the Project's goals and has a low potential to cause downstream sedimentation impacts. However, the cost of full sediment excavation and removal (~$75,000, assuming no additional costs for special landfill disposal), and the relatively large area disturbance required for this option do not meet the goal of implementing a simple, low-cost solution to meet the stream restoration and safety goals. Therefore, this alternative has been removed from consideration as the Preferred Alternative.

3.4 Alternative 4: Full Dam Removal with Partial Impounded Sediment Removal (Preferred Alternative)

Alternative 4 would provide the same level of dam removal and stream restoration as Alternatives 2 and 3 and would include mechanical removal of a portion the 550 cy of impounded sediment that has been determined to be readily mobile, through creation of a pilot channel through the impoundment. For planning and pricing purposes, the volume to be removed is assumed to be 525 cy, but the exact volume and extent of channel excavation will be determined in consultation with the permitting agencies and will reflect a balance between controlling short term impacts and the feasibility of sediment removal from the site. The pilot channel will closely approximate the natural channel formation that would occur under Alternatives 2 (in terms of morphology, slope, size etc.). Some portion of the excavated sediment would be reused for shaping and grading on site, but this on-site use is unlikely to require all the sediment removed. The unused portion would be disposed of off-site (Inter-Fluve, 2020b) . Like Alternative 3, off-site disposal will require dewatering and transport by road-worthy dump trucks, but the dewatering area will be smaller (minimizing the area of upland disturbance), and the smaller sediment volume being removed (525 cy) will reduce the number of truck trips required for disposal (35 as compared with ~100 trips for Alternative 3).

Alternative 4 would reduce the potential for temporary sediment impacts to downstream receiving areas relative to Alternative 2 but will likely not prevent all sediment movement because the narrow valley bottom, irregular bedrock and boulder pre-dam surface will likely inhibit complete removal of sediment within the pilot channel. The nature (primarily sand and fines) and relatively shallow depth of impounded sediment also make this material easy to displace and mobilize. The stream will need to be rerouted during channel excavation. Activities associated with shaping and grading, water control, and sediment dewatering and hauling will require limits of disturbance greater than the footprint of the excavated channel, but smaller than required for Alternative 3. Off-site hauling of material would cause wear and tear on the access road and on East Street, but also relatively less, as compared to Alternative 3 (Inter-Fluve, 2020b)

This alternative meets the Project's goals, reduces the potential for sediment impacts to Sages Ravine and areas further downstream, and avoiding the cost of complete sediment removal (Alternative 3). Therefore, Alternative 4 has been selected as the Preferred Alternative.

3.5 Alternative 5: Dam Repair

Alternative 5 is to leave the dam in place and conduct repairs to eliminate the safety issues posed by the condition of the dam. This option would preserve the current recreational uses of the impoundment behind the dam, including pond fishing and skating, as well as the aquatic pond habitat. However, these recreational uses are likely to decline over time, as continued sediment accumulation behind the dam will eventually trigger a transition from an open water habitat to marsh. Dam repair would also avoid downstream sedimentation issues associated with either removal or failure of the dam. However, this alternative would continue the long history of passage constraints for aquatic organisms and continued deposition of sediment and organic material within the impoundment. Both these conditions interfere will the natural function of the stream system. The repaired dam will also require long term operation and maintenance (along with associated costs), and this alternative will not eliminate the on-going liability risk associated with the structure.

Due to the current poor condition of the dam, this option would be also substantially more costly than dam removal. An inspection of the dam conducted in 2016 identified three critical deficiencies (cracked and failing left training wall, the detachment of the left training wall from the concrete core wall, significant soil erosion of the earthen embankment adjacent to the left training wall) as well as additional, less critical deficiencies, and the dam has continued to deteriorate since that inspection (Fuss & O'Neill, 2016). Repairs recommended by Fuss & O'Neill consist of correcting the deficiencies identified, and "most importantly removing and replacing the left training wall". Costs associated with this option would include initial repairs followed by future inspections and maintenance as needed, to maintain the dam in good condition. Although no estimate of the total cost of Alternative 5 is available, a 2015 report summarizing the benefits of stream barrier removal projects at six sites in Massachusetts found that dam removal was 60% less expensive than repair and maintenance over 30 years (DER, 2015). In addition, although Alternative 5 would avoid the short-term downstream impacts associated with sediment release from dam removal, it would result in similar levels of construction-related impacts as the dam removal Alternatives (heavy equipment access, ground disturbance and erosion etc.).

This alternative would not meet the project goals (particularly the restoration of riverine connectivity), would be considerably more expensive than the dam removal alternatives, and would still require large-scale site disturbance during construction. Therefore, this alternative has been removed from consideration as the Preferred Alternative.

3.6 Comparison of Preferred Alternative to Dismissed Alternatives

Alternative 4 (Preferred Alternative) was chosen because it meets the Project's goals at a reasonable cost and with small and temporary potential for downstream impacts. A comparison of five alternatives is presented in ***Table 3-1***. A description of each alternative's impacts on recreation, habitat, wetlands, sediment transfer within the limit of work and downstream, and costs follows.

Table 3-1: Comparison of the Five Project Alternatives

Alternative	Consistency with Project Goals*	Cost	Impacts to Environmental Resources	Impacts to Recreational Resources and Liability
1. No Build	Not Consistent	None**	Ongoing impact to stream function.	Current uses can continue (until sediment accumulation causes transition from open water to marsh habitat); long term, hazardous conditions associated with the dam remain and could affect safety at the pond and downstream thereby increasing liability risk for TNC.
2. Dam Removal, Passive Release of Sediments	Consistent	Low	Stream function restored with temporary increase in sediment release potentially affecting Sages Ravine and other downstream resources; change in amount, but not type of regulated wetland resources; minimal wildlife impacts. Improved resiliency to flow fluctuations associated with climate change.	Pond fishing would be lost but replaced with improved stream fishing opportunities. Potential to ice skate would be lost, but hunting, hiking, snowshoeing, and xc skiing remain. Aesthetic enjoyment of the pond would be lost, but the natural forest and stream environment provide similar opportunities to appreciate nature. Removal of the dam removes the liability risk of dam ownership.
3. Dam Removal, Full Removal of Sediments	Not Consistent	High	Stream function restored, lowest potential for sediment release to downstream system. Other impacts same as Alt. 2.	Same as Alt. 2.
4. Dam Removal, Partial Removal of Sediments	Consistent	Medium	Stream function restored with low amount of sediment release to downstream system. Other impacts same as Alt 2.	Same as Alt. 2.
5. Dam Repair	Not Consistent	Very High***	Ongoing impact to stream function. No potential for sediment release.	Current uses continue (until sediment accumulation causes Becker Pond to transition from open water to marsh habitat); no long-term safety concerns, but long-term operation and maintenance would be required. Liability risks associated with dam ownership remain.

* Project goals are to implement a simple, low-cost solution to restore stream habitat and improve safety.

**Future costs due to hazardous conditions are possible and may be borne by downstream users/ owners, rather than the dam's owner.

***Repair costs plus ongoing, future maintenance

Alternative 1 - No Build/No-Action: The No-action Alternative would preserve the shallow impoundment environment and eliminate the cost of dam removal and stream restoration. There would be no change to existing habitats and current recreation uses could continue. This option would not cause sedimentation impacts, although future sedimentation associated with dam failure could occur. The impoundment will continue to function as a sediment trap, which may reduce water depths in the pond and alter habitat value. This option does not meet the Projects goals of restoring riverine aquatic and hydrologic connectivity through the site, restoring habitat for brook trout, and eliminating the safety hazard posed by the dam. The No-Build alternative would not meet the Project's goals and was dismissed.

Alternative 2 – Full Dam Removal with Passive Downstream Release of Impounded Sediment: This alternative would fully remove the dam and allow a stream channel to reform and impoundment sediments to mobilize naturally. The impoundment habitat would be replaced with restored stream habitat and the upper and lower stream reaches reconnected. However, because sediments would be allowed to mobilize naturally, there is potential for large, uncontrolled pulses to be released, which could cause high loads of suspended sediments and excessive sedimentation downstream. Although both these conditions would be temporary due to the dynamic nature of the steam environment, they could potentially negatively impact stream invertebrates, fish, and downstream recreational uses.

Impacts to regulated wetlands resources consist of replacing the existing Bank and Land Under Water (LUW) with a smaller area of LUW and potentially a shorter length of Bank. There is currently no Bordering Vegetated Wetland in the Project footprint. Removal of the Becker Pond Dam has the potential to convert existing LUW to either wetland or upland community types, depending on natural stream processes and resultant morphology and hydrology which establish after the dam has been removed.

Impacts to recreation resources include a loss of activities potentially provided by the impoundment (e.g., pond fishing, ice skating), but other passive, nature-based recreational opportunities would remain, including improved stream fishing, hunting, hiking, snowshoeing, and xc skiing. Aesthetic enjoyment of the pond would be lost, but the natural forest and stream environment provide comparable opportunities to appreciate nature. Resiliency to climate change induced fluctuations in in precipitation and flow will be increased, as the restored channel will, at minimum, pass the 100-year flood and during storms with higher flows, the former pond will act as a flood storage area.

The literature suggests that restoration of natural ecological processes and associated benefits to native aquatic species though dam removal outweighs potential negative impacts. Studies have demonstrated increased diversity of both aquatic and native species, among other benefits (Bednarek, 2001; Higgs, 2002; Magilligan et al., 2016). For this Project, generalist, warm-water species (e.g., smallmouth bass), that may be present in the impoundments would lose habitat, while cold-water species (e.g., brook trout), would benefit from moderated stream temperatures and expansion of accessible habitat. The loss of pond habitat with the Project footprint will affect individuals of some water dependent wildlife species (e.g., amphibians) that currently use the pond, but removal of the dam will not affect the upstream wetland habitat, which will continue to provide habitat for water dependent species and support their contribution to the local food web and other natural processes. Consultation with NHESP has confirmed that there are no known rare or endangered water-dependent species in the impoundment area. Refer to **Appendix F** for copies of email correspondence (to date) with NHESP.

As summarized above, Alternative 2 meets the Project's goals of restoring riverine aquatic and hydrologic connectivity through the site, restoring habitat for brook trout, and eliminating the safety hazard posed by the dam. However, because it carries a risk of higher downstream sedimentation impacts, it was dismissed.

Alternative 3 – Full Dam Removal with Full Impounded Sediment Removal: Like Alternative 2, this alternative would fully remove the dam. Additionally, all the accumulated sediments present in the impoundment would be removed through excavation, dewatering, and off-site hauling. This option would have all the same effects described above for Alternative 2 and would carry only a low risk of downstream sedimentation impacts. However, the added cost of sediment removal would make this option substantially more expensive, and the large area of impact required for sediment removal do not meet the goal of a simple, low-cost project. This option was therefore dismissed.

Alternative 4 – Full Dam Removal with Partial Impounded Sediment Removal (Preferred Alternative): This alternative would fully remove the dam, and about 1/3 of the sediments present in the impoundment through excavation, dewatering, and off-site hauling. This option would have all the same ecological benefits described above for Alternative 2 and would carry a lower risk for downstream sedimentation impacts and have lower construction costs than Alternative 3. This alternative meets the Project's goals of restoring riverine aquatic and hydrologic connectivity through the site, restoring habitat for brook trout, and eliminating the safety hazard posed by the dam, while also reducing project costs. This option was accepted as the Preferred Alternative.

Alternative 5 – Dam Repair: This alternative would repair the dam to meet current safety standards and would subsequently require on going monitoring and maintenance of the dam to ensure safe conditions are maintained for years into the future. Like Alternative 1, there would be no change to existing habitats, current recreation uses could continue, and there would be no sedimentation impacts. However, this option does not meet the Project's goals, and would be more expensive than dam removal. It would also maintain liability risk for TNC. As such, this alternative was dismissed.

4 DETAILED PROJECT DESCRIPTION

4.1 Objectives and Anticipated Benefits of the Project

TNC and its partners seek to implement a simple, low-cost solution for dam removal to eliminate the safety hazard posed by the dam, and to restore stream function by restoring aquatic and hydrologic connectivity through the site. Removal of the dam will have long-term benefits to public safety by eliminating the possibility of catastrophic dam failure, as well as the hazards associated with dangerous conditions at the dam itself. Removal of the dam is also a proactive aquatic habitat restoration project that will restore a natural river corridor through the former impoundment and restore connectivity between the upper and lower reaches of the brook. The project will restore the brook to its natural state as a coldwater fishery, which is particularly important for the conservation of brook trout (*Salvelinus fontinalis*), among other coldwater fishery species. Dam removal will improve the ecological function of the brook by decreasing water temperatures, increasing dissolved oxygen levels, and restoring natural sediment transport pathways downstream of the current dam (Bednarek, 2001; Lessard & Hayes, 2003; Zaidel, 2018). The restored stream channel will provide improved brook trout habitat, while also restoring connectivity between the upstream and downstream segments of the stream.

Restoration of natural ecological processes will produce long-term benefits that are expected to outweigh any temporary negative impact resulting from the dam removal and construction activities. Dam removal will cause temporary, short duration pulses of increased suspended sediments mobilizing from the former impoundment. These effects will last until the readily mobile portion impounded sediment remaining after pilot channel excavation have been mobilized. The volume of sediments remining after excavation is unknown at this time because the volume and extent of channel excavation will be determined during permitting, in consultation with the permitting agencies. However, it will be less than the estimated 550 cy of sediment estimated to be readily mobile by Inter-Fluve (Inter-Fluve, 2020b).

Storm events or other stochastic perturbations will mobilize sediment over time. The duration of these effects will be dependent on precipitation patterns and the consequent flow regime after dam removal is complete (Inter-Fluve, 2020b). The sedimentation may result in a temporary reduction in certain sedimentation-intolerant macroinvertebrates, and the increased suspended sediment concentrations may be harmful to some brook trout (Cordone & Kelly, 1961; Gradall & Swenson, 1982; Newcombe & Jensen, 1996). The greatest effects of sedimentation will be to slow water pools and deposition areas. The effects on downstream macroinvertebrates and brook trout will be temporary and mostly local to the dam. These effects will occur over relatively short period as the flow characteristics of the brook reach a new dynamic equilibrium where habitats are recovered and improved for the native aquatic species as compared to conditions when the dam and pond were in place. Fish and other aquatic species will be able to migrate through the entirety of the brook, from the headwaters to its confluence with Schenob Brook.

4.2 Physical Characteristics of the Project Footprint and Surroundings

Becker Pond Dam is located on an unnamed brook in a relatively remote area near Mount Washington State Forest in the southwestern corner of Massachusetts (**Appendix C**, Figure 1). Downstream of the Site, the brook flows through Sages Ravine and eventually drains to Schenob Brook, a tributary to the Housatonic River. The dam and surrounding property are part of the 800-acre Mount Plantain Preserve, owned by TNC, and are accessible via an unpaved road through private property off of East Street, south of Mount Washington. The property is used by the public for hunting, fishing, and other recreation. TNC recently constructed a footbridge upstream of the impoundment to connect the original and new Hallig Trails on either side of the brook. The next bridge over the brook (Undermountain Road, Salisbury, Connecticut) is approximately two miles downstream.

Becker Pond covers an area of approximately 0.65 acres. Becker Pond Dam is composed of a 95-footlong earthen embankment and a concrete core wall. The dam outlet consists of a rectangular weir spillway with a concrete apron and concrete training walls. The structural height of the dam is approximately 14.25 feet. The crest of the concrete spillway is set approximately 2.25 feet below the top of the concrete core wall and has a weir length of 23.2 feet. The concrete training walls retain the earthen embankments adjacent to the spillway section and direct flow over the concrete apron. The concrete apron extends approximately 16.75 feet downstream of the base of the spillway. A low-level outlet is present, but it is inoperable. A visual inspection carried out in 2016 (Fuss & O'Neill, 2016) found the dam to be in poor condition with several critical issues, notably, the left training wall, which is cracked and failing, has slipped off its foundation. The inspection also found significant erosion of the earthen embankment adjacent to the wall and cracked and spalling concrete in other areas. The wooden bridge crossing the dam has partially collapsed and has been cordoned off by TNC and warning signs posted. Photos of Becker Pond Dam and the conditions described above are available in The Becker Pond Dam Removal 75% Design Report (**Appendix D**).

From the base of the dam the stream flows in a southerly direction within a defined channel and as the gradient increases, the flow becomes predominantly run/pool/cascade. Continuing downstream, the gradient continues to increase, approximately a mile below the dam, the brook enters the Sages Ravine which consists of falls, cascades, plunge pools and runs, and extends for over a mile. Thereafter, the brook returns to a lower gradient and continues to flow in a more easterly direction, passing under South Undermountain Road (CT Route 41) and then flowing into Schenob Brook. Additional detail regarding the physical setting of the project is provided in in Sections 5.1 and 5.2.

The project footprint will consist of the existing dam, the existing impoundment, a temporary staging area at the dam, a sediment dewatering area at the dam, the existing access road, a new section of access road and a small, temporary staging area where the new section access road joins East Street. Please see Plan Sheet 3 in **Appendix C** for the site plan depicting these features, except the dewatering area. The best location of the dewatering area will be determined in consultation with DER and DEP as part of the Project permitting process. Note also that the existing parking area for Hallig trail, about 0.75 miles north on East Street, will also be used as a staging area.

4.3 Construction Schedule, Methods, and Costs

The proposed schedule for construction is to remove the dam in 2022, provided necessary permits and authorizations are obtained and construction funding is secured. The active construction phase consists of dam removal, sediment removal and revegetation. Work is expected to take place during the summer, and last about six weeks.

4.3.1 Construction Methods and Sequence

All of the following information is taken directly from The Becker Pond Dam Removal 75% Design Report (Inter-Fluve, 2020b). Note that site-specific water management, concrete removal, and sediment dewatering plans will be developed in consultation with DER and DEP to minimize impacts, as part of the permitting process.

Access to the dam for construction will occur from the west side via East Street. The access route is located entirely on TNC property, originating on East Street and joining the existing access road approximately 700 linear feet from East Street. At the location of the access point, East Street is a well-maintained gravel road. The existing dirt access road is approximately 10-12 feet wide and will be wide enough for access of heavy construction vehicles. Some vegetation clearing may be necessary, and tree branches may need to be removed. Wherever possible, large woody debris will be left on-site to provide wildlife habitat. Where the existing access road approaches the dam, there is a small loop around a few mature hemlock trees. This loop will be available for access to allow for turning and storage of vehicles.

The construction contractor typically identifies a preferred construction sequence that is reviewed and approved by the Owner and Owner's Technical Representative. Primary considerations for sequencing at this site are access constraints, minimizing safety risk associated with operating near the failing training walls, and minimizing disturbance within the channel. For planning purposes, the following is a suggested construction sequencing based on experience with other dam removal projects and this dam's specific site conditions:

1. Establish the entrance for the new access road on East St, and a separate staging area at the existing parking area for Hallig trail, about 0.75 miles north, also on East Street. Install erosion and sedimentation control BMPs, high visibility fencing, and temporary closure signs as needed in both locations.
2. Clear and grub for the new permanent access road. Construct new access road.
3. Establish staging area adjacent to the dam. Install erosion and sedimentation control BMPs, high visibility fencing, and temporary closure signs.
4. Implement water management plan.
5. Remove the dam spillway.
6. Remove the right-hand training wall.
7. Excavate the earthen embankment, remove the concrete core wall, and grade the slope on the river right.

8. Remove the left-hand training wall.
9. Excavate the earthen embankment, remove the concrete core wall, and grade the slope on river left.
10. Excavate the pilot channel.
11. Install surface fabric, seed, and plantings within limits shown (**Appendix C**, Plan Sheet 5).
12. Remove water management controls.
13. Restore disturbed areas to a suitable condition.
14. Remove erosion and sedimentation controls.
15. Remove equipment and seed and plant along the new permanent access, converting it to a walking path.
16. Remove temporary fencing and signs.

4.3.2 Costs

All of the following information is taken directly from The Becker Pond Dam Removal 75% Design Report (Inter-Fluve, 2020b).

The engineer's opinion of the probable construction cost for the project was provided in the Revised 75% Design Submittal dated September 14, 2020 and was estimated to be $179,300. This cost estimate includes construction at the dam site (mobilization and demobilization, flow management, erosion control, dam demolition and disposal, earthwork), access road construction, and stabilization and revegetation at both construction areas. The components are described in the construction sequence below.

We estimated lump sum and unit costs based on review of construction costs for similar items in past projects and applicable reference cost data. The actual implemented cost may vary from these estimates as a result of market factors, detailed design development, requirements of other permitting efforts, or other factors.

Several assumptions were made in developing costs. Key assumptions include:

- A construction duration of approximately four weeks;
- An estimated 225 cy of the excavated sediment is expected to be used to restore the left bank at the location of the historical borrow pit as shown on the Plans, and additional on-site uses for excavated material may be identified. However, the cost estimate conservativity includes an additive item for offsite disposal for up to 525 cy;
- Additional excavation as required to remove the full vertical and lateral extent of the concrete core wall is considered incidental to the Dam Demolition and Disposal item;
- The excavation volume excludes the concrete volume;
- Offsite disposal of concrete will be required;
- Access: Work to construct the new access entrance and road will be necessary and will consist of clearing and grubbing. Cleared vegetation will be chipped and left on site, and material import for road construction will not be required. The new road will be partially seeded and planted following construction to narrow its width for permanent pedestrian access only; and
- Construction of drainage facilities for the new access road will not be necessary.

We applied a contingency of 20% to account for uncertainty associated with bidding and the construction process, uncertainty or future changes in unit costs, and scope or design changes that may arise during the design process or resulting from permit conditions.

5 EXISTING ENVIRONMENT

5.1 Physical Environment

Becker Pond is located in the southwest corner of Massachusetts, within the Taconic Mountains Ecoregion and is part of the Schenob Brook Drainage Basin Area of Critical Environmental Concern (designated as such in 1990). The area is significant for being one of the largest continuous calcareous seepage swamps and finest examples of calcareous fens in southern New England (Secretary of Environmental Affairs, 1990). Mount Washington is very sparsely populated, with a density of 7.5 people per square mile. Much of the town is forested and over 73% of the town is in a state of perpetual protected open space (NHESP, 2012). The watershed upstream of Becker Pond is approximately one square mile, 80% of which is forested, 1.8% developed and an additional 0.05% impervious surface (StreamStats 4.5.2).

5.1.1 Topography, geology, and soils

Becker Pond and the Sages Ravine Brook ecosystem lies within a Pelitic metamorphic rock deposit that comes from shale and is rich in minerals, especially Aluminum. Becker Pond is situated in a narrow finger of the Grenville Shelf Sequence extending into the Eugeosyncline Sequence, which contains metavolcanic layers and lenses of ultramafic rocks (Robinson & Kapo, 2003). The surficial geology of the watershed is largely mapped as till with shallow bedrock with the valley bottom containing some sand and gravel. The soils underlying Becker Pond and the wetlands comprising the drainage upstream of the dam are very stony Brayton Silt Loam. This drainage is in the bottom of a less well-defined ravine comprising soils of the Lanesboro-Dummerston association, which is steep and very stony (*USDA Web Soil Survey*, n.d.).

Becker Pond lies within a deep valley between Mt. Ashley to the west, which rises to an elevation of over 2360 ft above MSL, and Mt. Plantain to the east, which rises to an elevation of about 2000 ft. The pond lies at an elevation of 1624 ft. The headwater wetlands that occur within about 3280 ft of Becker Pond lie at a watershed divide, draining southward into Sages Ravine, and feeding Schenob Brook and the Housatonic River, while similar wetlands separated by fewer than 330 ft drain northward into Lee Pond Brook and ultimately into New York via Bash Bish Brook.

5.1.2 Surface and Groundwater Hydrology and Quality

Surface water runoff from the western flank of Mt. Plantain drains directly to the brook and its wetlands upstream of the dam. Runoff from Mt. Ashley, however, is intercepted by East Street where it is carried in roadside ditches and beneath East Street via culverts. Groundwater in the basin is stored in both bedrock, where it is tapped by private wells along East Street, and shallow till deposits. Groundwater levels likely fluctuate in response to precipitation and seasonal changes with the brook being a source of recharge at times and a recipient of shallow groundwater discharge at others.

There are no known water quality sampling sites in the Becker Pond watershed or along the brook. Neither waterbody has documented water quality impairments, and there are no underground storage tanks or other potential sources of industrial contamination mapped within the watershed (Inter-Fluve, 2020b). Homes on East Street have septic systems that have the potential to impact water quality (nutrients, pathogens) if not properly maintained.

Impoundments, even small ones, are known to be associated with elevated stream temperatures and reduced dissolved oxygen concentrations (Bednarek, 2001; Zaidel, 2018). Downstream water quality can also be affected at sites where low-level outlets are not used and instead, warm surface water is released downstream (Bednarek, 2001). Because the low level outlet at Becker dam is inoperable, it is likely that water temperatures and dissolved oxygen content within the brook are affected by the presence of the dam.

5.1.3 Air quality, Greenhouse Gas Emissions

Becker Pond dam and the impoundment it creates are not a source of man-made greenhouse gases, or any other emissions that impact air quality.

5.1.4 Noise

Currently, Becker Pond dam and the impoundment it creates are not a significant source of noise, beyond the cascade sound that is generated by the artificial spillway. The site is also not a receptor of noise, as the closest roadway and other development (dwellings) are more than ¼ away from the pond. The pond is buffered from these features by vegetation and topography, and the road traffic is very low volume and seasonal.

5.2 Natural Environment

5.2.1 Vegetation and Terrestrial Habitat

The dominant covertype surrounding Becker Pond are transitional between major northern and southern New England forest types and comprise a diverse mix of hardwood and conifers. In the immediate vicinity of the pond and stream, eastern hemlock (*Tsuga canadensis*) dominates the overstory and also make up a significant part of the shrub sub-canopy. Birch (*Betula* spp.), maple (*Acer* spp.), and oaks (*Quercus* spp.) are common adjacent the entire channel downstream of the dam. As the elevation rises toward East Street, conifers become less common in the forest canopy and a dense mountain laurel (*Kalmia latifolia*) understory occurs in a wide band midway between the pond and East Street. Becker Pond sits within an interior forest block of nearly 6,000 acres. Interior forest blocks are defined by the Massachusetts Division of Fisheries & Wildlife as extensively forested portions of the landscape where forest is relatively unfragmented (MassGIS metadata). This is an important measure of landscape connectivity that is used to identify potential forest reserves because of the impact that roads and built infrastructure have upon forest ecosystems. Large tracts of unfragmented forestland is rather uncommon in Massachusetts.

5.2.2 Wildlife

The landscape containing Becker Pond and the unnamed stream that flows into Sages Ravine can support species that require significant tracts of unfragmented habitat. These tend to be less tolerant of human interaction and are typical of the undeveloped forests of south-western Massachusetts. Moose (*Alces alces*), beaver (*Castor canadensis*), bobcat (*Lynx rufus*), and black bear (*Ursus americanus*) have steadily increased both in range and population over recent decades. As is the case throughout much of Massachusetts, species like the fisher (*Pekania pennanti*) and wild turkey (*Meleagris gallopavo*) have rebounded in response to reintroduction efforts and increased forest cover state-wide.

Other common wildlife species likely to be present within the Project area include red-back salamander (*Plethodon cinereus*), red-spotted newt (*Notophthalmus viridescens*), gray treefrog (*Hyla versicolor*), ruffed grouse (*Bonasa umbellus*), wood duck (*Aix sponsa*), barred owl (*Strix varia*), yellow-bellied sapsucker (*Sphyrapicus varius*), black-capped chickadee (*Poecile atricapillus*), veery (*Catharus fuscescens*), red-eyed vireo (*Vireo olivaceus*), blackpoll warbler (*Setophaga striata*), ovenbird (*Seiurus aurocapilla*), little brown bat (*Myotis lucifugus*), snowshoe hare (*Lepus americanus*), northern flying squirrel (*Glaucomys sabrinus*), white-tailed deer (*Odocoileus virginianus*), and porcupine (*Erethizon dorsatum*). Wetlands north of the Becker Pond impoundment provide a rich diversity of natural habitats that can support native fisheries, amphibians, reptiles, mammals, and birds.

5.2.3 Fisheries and Aquatic Habitat

As a backdrop to the discussion of fisheries and aquatic habitats, information provided in *Section 5.1.1 and 5.1.2* on topography and geology as well as surface water hydrology and quality provides an understanding of the physical attributes of the unnamed brook that flows into the impoundment and through Sages Ravine. In summary, this stream system occurs within a largely wooded watershed where the stream bed consists primarily of sand, gravel, cobble, boulder and bedrock. Organic detritus is contributed by adjacent and overhanging vegetation, but because of the stream gradient, there are not long stream reaches with substantial accumulation of fine sediments and organic material. Suspended sediment concentrations are typically low because of the predominantly undeveloped and forested watershed, but there are minor fluctuations related to storm events.

The following detailed information regarding the stream and impoundment habitat, as well as the fishery and invertebrates present, is drawn directly from the Becker Pond Dam Removal 75% Design Report (Inter-Fluve, 2020b).

Stream Habitat –The stream habitat goes through several transitions from the upper reaches of Sage Ravine Brook, past Becker Pond, through Sage Ravine to the confluence with Schenob Brook. The first approximately 1200 feet of the identifiable stream flows through a marsh wetland system created by beaver dams and a remnant woods road (former farm cart path?) stone/earthen berm. After the woods road crossing, the stream channel becomes more defined and flows through low gradient area with patches of fringing marsh. This area consists of pool and run habitat. This habitat continues to near the head of the pond. In this segment the stream sediment is predominantly sand and gravel.

The stream channel then continues at the base of the dam and continues in a southerly direction within a defined channel with sand and gravel sediments interspersed with cobble and bedrock), and the gradient increases, and the flow becomes predominantly run/pool/cascade. This section has steps created by bedrock, bounders and fallen logs, creating 1-to-3-foot vertical drops with plunge pools downstream.

Continuing downstream, the gradient continues to increase, flow velocities increase, and the stream substrate changes to boulder/bedrock in swift flowing areas and gravel in pools or runs. And further downstream, approximately 1 mile below the dam, the brook enters the Sages Ravine section, which extends for over a mile. The Sages Ravine segment consists of falls, cascades, plunge pools and runs. The stream bed, because of the gradient and water velocity is predominantly bedrock and boulder with plunge pools largely gravel and cobble. Thereafter the brook returns to a lower gradient and continues to flow in a more easterly direction, passing under South Undermountain Road and then flowing into Schenob Brook.

A reconnaissance level survey of potential depositional areas downstream of the dam was undertaken by Inter-Fluve in 2020 (Inter-Fluve, 2020b). Reaches downstream of the dam were found to be generally lacking fine sediment, reflecting both the effect of the dam in trapping sediment and the high competence of the stream. Fine sediment deposits were observed in areas where gradient is locally reduced, or the valley is locally wide; locations where lower flow velocities and shear stresses allow for settling out of finer material.

Pond Habitat - Becker Pond has a surface area of about 0.65 acres, and at the dam had a historical depth of about 12 feet. The shoreline of the pond is heavily vegetated with trees and shrubs. As described in Section 2.3 and Appendix A of the Becker Pond Dam Removal 75% Design Report, the impoundment has accumulated about 1,500 cy of primarily sand with some gravel and fine sediments behind the dam, based on sampling conducted for the Project. Chemical testing of the sediments conducted for the Project show that concentrations of many of the pollutants were below detection levels. Pollutants that were detected were detected at levels below freshwater probable effects (Inter-Fluve, 2020b). In May 2019, DER released a Due Diligence Review that failed to identify any sources of potential contaminants within the brook's watershed that would have resulted in contaminants being present within the pond sediments (DER, 2019).

Stream Fisheries - A 2002 report (Schmidt et al., 2002) only identified brook trout in stream reaches above the pond, in the pond, and downstream of the pond. The pond was sampled by hook and line while the stream reaches were sampled by backpack electrofishing. More recent sampling by Massachusetts Department of Fish & Game only identified brook trout, based on electrofishing efforts in 2016 (Fontaine, pers com).

Pond Fisheries - The hook and line sampling undertaken by Schmidt (2002) resulted in the catch and release of only brook trout.

Stream Invertebrates - A 2002 report by Schmidt presented the results of sampling the benthic macroinvertebrate community upstream and downstream of Becker Pond. Results of survey showed no statistical difference in number of macroinvertebrate species (39 upstream, 35 downstream), number of individuals (391 upstream, 320 downstream), number of EPT species (13.7 upstream, 13.4 downstream) and diversity (0.86 upstream and 0.88 downstream). The kick net results did indicate a significant difference in the EPT/Chironomid counts (upstream 10.4, 0.47 downstream), which was attributed to considerably greater amount of moss in the upstream sample reach. In addition to a number of genus in the Ephemeroptera (mayflies), Trichoptera (caddisflies) and Plecoptera (stoneflies) orders, collected invertebrates included genus of dragonfly, beetle, net-winged insects, true flies, leeches, earthworms, amphipods, isopods, snail, and clam (Schmidt et al., 2002).

5.2.4 Wetlands

Becker Pond lies within a primarily forested, upland landscape. To the north of Becker Pond, the unnamed stream which flows into the pond flows through a saddle between Mount Ashley and Mount Plantain, allowing development of a complex of wooded and shrub swamp wetlands around the brook upstream of Becker Pond. A small beaver-impounded area of approximately one-half acre occurs in the middle of the wetland complex provides a small area of open water and shallow and deep marsh habitat. Downstream of the dam, the stream channel becomes narrow and is contained within a deep ravine that has little to no topography that supports the development of wetlands. Wetland resources under the jurisdiction of the Massachusetts Wetlands Protection Act Regulations (310 CMR 10.00 *et seq.*) currently present in areas that will be directly affected by the footprint of Project construction are described below and are depicted on Plan Sheet 11, **Appendix C**. Note that all jurisdictional resources are located around the dam and impoundment, and the extent of these resources were determined by desktop analysis. Field delineation efforts did not identify any additional jurisdictional areas along the existing and proposed access road. The extent of the access road areas field surveyed for wetlands is depicted on Plan Sheet 2, **Appendix C**.

Bank – Under present conditions, Bank resources associated with the Becker Pond impoundment total 1260 linear feet (640 linear feet (lf) of left bank, 620 lf of right bank).

Land Under Water (LU)– The Becker Pond impoundment is calculated as 42,400 square feet (sf) of Land Under Water.

Bordering Land Subject to Flooding (BSFL) – According to the FEMA website, "FEMA has not completed a study to determine flood hazard for the [Town of Mount Washington]; therefore, a flood map has not been published at this time." Inter-Fluve established the limit of BLSF using hydraulic modeling, 48,500 sf, but should subtract the 42,400 sf of LUW, resulting in an actual theoretical BLSF Existing Resource Area Dimension of 6,100 sf.

Riverfront Area (RA) – Under present conditions, there is no Riverfront Area associated with the unnamed stream channel that forms Becker Pond between the up-stream limit of hydraulic impacts, as depicted on the Becker Pond Dam Removal Plan (9/4/2020) and the base of the down-stream lip of the existing concrete apron. Following removal of the dam and reestablishment of the natural stream channel, RA will be created in accordance with the regulatory definition (310 CMR 10.58(2)(a)1.). (See Section 6.2.4).

5.2.5 Threatened and Endangered Species

Based on consultation with NHESP initiated in August, 2018 the is a single listed species know to be present within the Project area is an upland species that is not dependent on the resource associated with the dam or impoundment for habitat or feeding opportunities. Refer to **Appendix F** for copies of email correspondence (to date) with NHESP. It is anticipated that the project will need to file for a formal MESA Review, pursuant to 321 CMR 10.18, after the completion of the MEPA Review process. Anticipated measures for the protection of endangered species include implementation of a protection plan, and opportunities for habitat enhancement in the vicinity of the dam.

5.3 Human Environment

5.3.1 Visual/Aesthetic Characteristics

Becker Pond Dam is located on an unnamed brook in a relatively remote area within TNC's 800-acre Mount Plantain Preserve. As such, the area immediately surrounding the dam and impoundment is entirely forested. The closest developed parcel (190 East Street) is over 0.25 miles away. The watershed upstream of Becker Pond is approximately one square mile, 80% of which is forested, 1.8% developed and an additional 0.05% impervious surface (StreamStats 4.5.2). Remaining area consists of wetland and agricultural fields. Within this landscape context, Becker Pond serves as an aesthetic and visual resource for members of the general public who use the TNC property for hunting, fishing, and other recreation.

5.3.2 Recreational Resources

The Becker Pond Dam, which is also known as the Dombrowski Pond Dam, was constructed by the former owners of the property, the Dombrowski family, in the 1930s for personal use. Currently, the dam and surrounding property are part of TNC's 800-acre Mount Plantain Preserve and are accessible via an unpaved road through private property from East Street. The TNC property is used by the public for hunting, fishing, and other recreation.

TNC recently constructed a footbridge upstream of the Becker Pond impoundment to connect the original and new Hallig Trails on either side of the brook as part of the Mt. Plantain trail system. Downstream of the dam, the brook flows through Sages Ravine and eventually drains to Schenob Brook, a tributary to the Housatonic River. The Appalachian Trail (AT) runs alongside Sages Ravine, where the larger pools are used by the public for recreation including fishing and swimming. An unofficial campsite is located at the top of the ravine where the AT crosses the brook via a wooden footbridge. A number of popular swimming holes are present downstream of this campsite.

5.3.3 Traffic, Transit, and Pedestrian/Bicycle Access

The Project site is currently served by an existing gravel access road from East Street to the dam site. The majority of this access road is on land controlled by the Proponent, though the stretch closest to East Street is held by a private landowner (Parcel ID: Map 7, Lot 5). The current use of the dam does not have a traffic demand.

The existing wooden pedestrian footbridge crossing the dam has partially collapsed and has been cordoned off by TNC and warning signs posted. Upstream of the impoundment, a small stone wall crosses the channel and marks the approximate upstream limit of influence of the dam. TNC constructed a new footbridge approximately 50 feet upstream of this stone wall, which, as noted previously, connects the original and new Hallig Trails on either side of the brook. The next bridge over the brook (Undermountain Road, Salisbury, Connecticut) is approximately two miles downstream.

5.3.4 Historic Structures or Districts, and Archaeological Sites

There are no structures, historic or otherwise, within 0.25 miles of the Project site. To identify known and potential submerged cultural resources in the proposed project area as part of the MEPA EENF review process, the Board of Underwater Archaeological Resources (BUAR) conducted a preliminary review of its files, the Massachusetts Historical Commission's Massachusetts Cultural Resources Inventory System (MACRIS), historic maps, and secondary literature sources. BUAR provided a letter dated July 24, 2020, indicating that no record of any underwater archaeological resources was found and that the proposed Project "is unlikely to impact submerged cultural resources."

Additionally, a Project Notification Form was submitted to the Massachusetts Historical Commission and the Stockbridge Munsee Mohican Tribal Historic Preservation Extension Office, and both entities indicate that they do not expect upland archaeological resources to be impacted by the project. Please see Historic and Cultural Correspondence documents in **Appendix G**.

5.3.5 Land Use

As noted previously, Becker Pond Dam is located within TNC's 800-acre Mount Plantain Preserve and the area immediately surrounding the dam and impoundment is entirely forested. The closest developed parcel (190 East Street) is over 0.25 miles away. The upstream watershed is approximately 1.0 square mile in size, 80% of which is forested, 1.8% developed and an additional 0.05% impervious surface (StreamStats 4.5.2). Remaining area consists of wetland and agricultural fields. Developed parcels appear to be used as residences and/or for small-scale farming. Historical aerial photography (dating back to 1959) and topographic maps (dating back to 1888) suggest that current land use has not changed appreciably. Anecdotal information from the landowner indicates that Becker Pond Dam was constructed by the Dombrowski Family in the 1930s for "personal use," and there was no mill or other structure on site with the exception of a lean-to which has since been removed. This is corroborated by historical aerial photography and topographic mapping (Inter-Fluve, 2020b).

The watershed has seen little development or agriculture, and the hydrologic study indicates that the contributing area to the Becker Pond Dam remains undeveloped. The existing characteristics of the watershed including land use, land cover, and soils are consistent with the conditions that existed when the impoundment was created (Inter-Fluve, 2020b).

5.3.6 Socioeconomics and Environmental Justice

Becker Pond is located within the Mount Plantain Preserve in the Town of Mt. Washington, a 22.2 square mile town in southern Berkshire County. The 2015-2019 American Community Survey identified that Mt.

Washington had a population of 148, broken down by race as 94.6% White, 0% Black or African American, 2.7% American Indian or Alaskan Native, 1.4% Asian, and 0.7% two or more races (U.S. Census Bureau, 2020). The median household income for the years 2015-2019 was $66,250, with 14.9% of the population reported to be living below the poverty level (with a margin of error of ±13.1%), compared to the Berkshire County average of 10.9% (with a margin of error or ±0.9%).

No Census tracts surrounding the pond have been identified as Environmental Justice Populations based on a review of the MassGIS Census 2010 Environmental Justice Populations datalayer.

5.3.7 Climate Change, Sustainability and Resiliency

The effects of climate change, including increased frequency and intensity of precipitation events, underscore the importance of proactively managing dam infrastructure. The EENF included the results of the hydraulic/hydrologic analysis which was used to design the project and to gauge its potential downstream impacts. The hydraulic analysis and the hydrologic modeling were conducted in order to model to estimate water surface profiles under various flow conditions and channel/breach configurations. According to the EENF, under existing conditions the Becker's Pond Dam cannot adequately pass the 100-year, 24-hour storm event and includes flow overtopping the dam.

Under proposed conditions, the restored channel will, at minimum, pass the 100-year flood and during storms with higher flows, the former pond will act as a flood storage area. The EENF did not address how the effects of climate change may impact storm frequency or intensity. However, the dam is in poor condition and failure is expected. A visual inspection carried out in 2016 (Fuss & O'Neill, 2016) found several critical issues with the dam, notably the left training wall, which is cracked and failing and has slipped off its foundation. The EENF also notes that the inspection found significant erosion of the earthen embankment adjacent to the wall and cracked and spalling concrete in other areas. The wooden bridge crossing the dam has partially collapsed and has been cordoned off and warning signs posted. As indicated in the EENF, the project is intended to provide immediate benefits by reducing the potential risks to public safety and the environment associated with dam failure.

5.4 Rare or Unique features

5.4.1 Sages Ravine and the Appalachian Trail

Downstream of the dam, the brook flows through the Sages Ravine, alongside the AT. Sages Ravine is known for its swimming holes and beauty. The larger pools are used by the public for recreation including fishing and swimming. An unofficial campsite is located at the top of the ravine where the AT crosses the brook via a wooden footbridge. A number of popular swimming holes are present downstream of this campsite. There are numerous descriptions of the ravine on-line, along with maps and suggested hiking routes to visit it, including this example:

> "Sages Ravine is an undeniably beautiful stretch of the Appalachian Trail. There are small but lovely cascades and miniature falls stretched along a 0.5 mile section of the trail. Also found here is one of the state's best natural swimming holes, a reasonably deep and large hole that many thru-hikers have likely enjoyed as they either trekked north to Maine or south to Georgia. No one particular fall is itself remarkable. The tallest (and most photogenic) is a 10-foot horsetail easily seen from the trail as you hike past it. It's pretty but only moderately unique. The next tallest falls along this trail is a cascade of perhaps 6-feet in height. As a whole, the ravine is certainly pretty enough to warrant exploration and photography". (http://www.newenglandwaterfalls.com/ma-sagesravine-upperfalls.html)

5.4.2 NHESP Designated Features

The south-west corner of Massachusetts provides critically important habitat for multiple state-listed wildlife and plant species, including several data-sensitive species. The landscape surrounding Becker Pond is part of a Priority Habitat (PH1017) and Estimated Habitat (EH789) (NHESP, 2021). As noted in Section 6.2.5, the area that encompasses Becker Pond supports one data-sensitive species associated with upland habitats. Additionally, Becker Pond and the unnamed brook lie within a 7500-acre BioMap2 Forest Core which is part of a 35,000-acre BioMap2 Core Habitat and associated Critical Natural Landscape. The wetlands associated with the brook north of Becker Pond area also identified as BioMap2 Core Habitat Wetlands.

Downstream from Becker Pond and the Project area, the brook flows south into a NHESP-designated Hemlock Ravine Priority Natural Community, which encompasses Sages Ravine and is approximately 38 acres in size. This natural community type is dominated by eastern hemlock and has a dense canopy that restricts light and plant growth in the lower layers of the forest. According to NHESP, this is a relatively large example of the classic ravine-type Hemlock Ravin Priority Natural Community, with good structural diversity and patches of old growth present and is in very good condition. NHESP ranks this community type as S4, Apparently Secure, but Hemlock Ravine Priority Natural Communities are threatened by the Wooly Adelgid, an invasive pest species which is moving increasingly northward with warming climate trends.

5.4.3 Schenob Brook ACEC

As described on the program website hosted by Massachusetts Department of Conservation and Recreation (DCR), Massachusetts Areas of Critical Environmental Concern (ACECs) receive special recognition because of the quality, uniqueness and significance of their natural and cultural resources. These areas are identified and nominated at the community level and are reviewed and designated by the state's Secretary of Energy and Environmental Affairs. The Schenob Brook Drainage Basin ACEC was designated in August 1990 (Secretary of Environmental Affairs, 1990), and encompasses approximately 13,750 acres with and the Hudson and Housatonic watersheds, within the Towns of Mount Washington and Sheffield. The DCR website describes the Schenob Brook ACEC as follows:

> "The Schenob Brook Drainage Basin ACEC, with its associated wetlands, comprises one of the most significant natural communities in Massachusetts. The largest continuous calcareous seepage swamp and the finest examples of calcareous fens in southern New England are located here. Over 40 state-listed rare and endangered species are located in the ACEC.
>
> The ACEC is located in the southern Berkshire mountains, at the Massachusetts-Connecticut boundary. Schenob Brook flows into Hubbard Brook, which in turn flows into the Housatonic River located east of the ACEC. The watershed area includes the eastern slopes of Mounts Frissel, Ashley, Race, Everett, and Undine in the town of Mount Washington.
>
> The unique wetlands include New Guinea Swamp, Willard Brook Swamp, Barnum Street Swamp, and the Schenob Brook fen and swamp. Approximately 2250 acres of the ACEC are wetlands. Several brooks cascade down the deep ravines and rocky gulches of the mountain slopes to the valley below. The Appalachian Trail traverses the western portion of the ACEC and provides panoramic views of some of the most scenic landscapes in Massachusetts. Portions of the Mount Everett State Reservation and Mount Washington State Forest are located within the ACEC.

Other important resources located in the ACEC include prime agricultural lands, with many small farms producing hay, corn, and livestock, and commercial tree farms, orchards, and woodlands; groundwater and springs, which supply local drinking water; extensive floodplains, which provide important flood storage and control; fishery habitat, with over twenty documented fish species; and historic and archaeological resources, which date back 10,000 years and include vintage colonial architecture"(https://www.mass.gov/service-details/schenob-brook-drainage-basin-acec).

6 ASSESSMENT OF IMPACTS

6.1 Physical Environment

6.1.1 Topography, Geology, and Soils

Removal of the dam will have an insignificant impact on the surrounding topography, geology and soils. The creation of a pilot channel in the former impoundment will return the Project footprint to a state more closely resembling the topography of the area prior to construction of the dam. Likewise, use of some of the excavated impoundment sediments for shaping and grading on-site would return the borrow area used during construction of the dam to its to a state resembling its original contours. These minor adjustments to the local topography of the Project footprint are specifically designed to support natural storm water run-off patterns and any linked natural processes. Because the impounded sediments do not appear to have any measurable contaminants (Inter-Fluve, 2020b), placing them in the borrow area will not negatively impact soil health.

6.1.2 Surface and Groundwater Hydrology and Quality

Surface and groundwater impacts of the project can be divided into short-term and long-term impacts.

Short-term – No short-term impacts on groundwater or groundwater quality are anticipated as a result of the Project. Short-term impacts on surface water include draining of the impoundment and turbidity. The impacts of draining on downstream flows will be minimized through gradual lowering of impounded water (by notching of the dam or possible removal of the low-level outlet gate). Construction activity and breaching of the dam will mobilize some fine organic and inorganic sediments, which will be held in suspension, resulting in temporarily increased turbidity downstream of the dam. The impact on aquatic species depends on the concentration and exposure time. Suspended sediment occurring after every rainfall event in natural, stable streams does not produce mortality in fish, and laboratory experiments exposing fish to suspended sediment showed mortality only at extremely high concentrations (Berg & Northcote, 1985; Bisson & Bilby, 1982; Cordone & Kelly, 1961; Gradall & Swenson, 1982). The Project will follow the Massachusetts Division of Fisheries and Wildlife's (DFW) recommendations regarding Project timing.

Over the months following dam removal, and particularly during periods of high flows associated with storms or snow melt, sediments initially impounded behind the dam will collect in downstream depositional locations. Over time, sediments within these depositional locations will in turn be remobilized and transported further downstream. Fine sediments will ultimately end up in Schenob Brook or flow into the Housatonic River in a dispersed and minimal level compared to other sources of deposited sediments. Eventually, the sediment within the unnamed brook will reach an equilibrium, and pulses of increased suspended sediments will diminish, returning to a natural cycle throughout the year. Based on regional analysis of suspended sediment discharge measurements at USGS gage sites (Simon et al., 2004), and the estimated drainage areas for the unnamed brook and Schenob Brook, the estimated average annual suspended sediment loads of the two brooks are approximately 3,000 tons and 41,300 tons, respectively.

Thus, estimated 2,250 tons of sediment in the impoundment constitutes 70% of the average annual suspended sediment load of the small brook and 5% of the annual suspended sediment load of Schenob Brook (Inter-Fluve, 2020b).

Short-term impacts to surface water may occur due to construction related activities, including increase stormwater run-off, erosion, sedimentation and/or turbidity. These impacts will be avoided and minimized as described in *Section 8*.

Long-term – No long-term impacts on groundwater or groundwater quality are anticipated. The existing wetlands upstream of Becker Pond will remain and will continue to provide ample opportunity for groundwater recharge. Regarding surface water hydrology, dam removal will result in a more natural flow regime through the former impoundment. Once the dam is removed and a natural stream channel is restored, and shrubs and trees colonize the former impoundment bottom up to the new stream banks, water temperatures and dissolved oxygen levels will return to the natural seasonal cycle that the brook experiences.

6.1.3 Air quality, Greenhouse Gas Emissions

This project is subject to review under the May 2010 MEPA Greenhouse Gas Emission (GHG) Policy and Protocol (the Policy) because it exceeds thresholds for a mandatory EIR. The GHG Policy includes a *de minimus* exemption for projects that are expected to produce minimal GHG emissions. Because GHG emissions for the projects will be limited to the construction period of the project, they are anticipated to be small. As such, this project falls under the GHG Policy's *de minimus* exemption and TNC was not required to submit a GHG analysis in conjunction with the EENF or for the SEIR. Note that construction-related emissions will be further minimized by implementing using ultralow sulfur diesel fuel (ULSD) and anti-idling requirements.

6.1.4 Noise

A short-term increase in noise levels with the Project area will be associated with the active construction period when heavy equipment is in use. Construction specifications for the contractor will include control of noise through the fitting of equipment with appropriate mufflers as part of the required pollution controls (**Appendix E**). Aside from the loss of sound created by water falling through spillway after the dam is removed, there will be no long-term change to the level of noise the Project area currently emits or receives, as its natural setting will be maintained, and the use of the Project area and its surroundings will not change.

6.2 Natural Environment

6.2.1 Vegetation

The Project will impact the vegetation directly within the Project construction footprint. Some trees will be removed to create the new section of access road, and side trimming, but not tree removal, may be required along the exiting access road. Tree removal for the new section of road will be minimized by restricting the width to the minimum needed to pass the construction vehicles. Creating a laydown area to store construction materials and equipment at the dam and for sediment dewatering will also require removal of some trees, but the laydown and dewatering areas will be minimized to the extent practicable.

Removal of the dam is not expected to have any effect on vegetation outside of this footprint, as the hydrology of the stream will not be affected so there will be no effects on plant growth related to changes in water availability. The area of upland vegetation may increase slightly when the impoundment footprint is revegetated. Negative impacts to vegetation could potentially occur due to the introduction of invasive species during construction activities or revegetation of the impoundment footprint. However, post-construction, TNC will monitor the Project site for invasive pant species and control these species as needed to prevent them from establishing permanent populations. TNC has been using invasive plant control methods in the southern Berkshires for over 15 years, with documented success at both controlling invasive plants and minimizing non-target impacts. Monitoring treatment success is tracked using vegetation monitoring plots, photo monitoring, and pre and post treatment site inspections and evaluations. All herbicide applications are performed by TNC staff, volunteers, or contractors who hold valid pesticide application licenses issued by the Commonwealth of Massachusetts. Please refer to **Appendix E** – BMPs – for TNC's guidelines on invasive species management.

6.2.2 Wildlife

The loss of open water habitat with the Project footprint will affect individuals of some water dependent wildlife species (amphibians) that currently use the pond for breeding. However, restoration of the natural brook will provide a net improvement in wildlife habitat, particularly for less common stream species which require continuous, well connected stream environments.

The loss of open water habitat will have little to no effect on the overall wildlife community away from the impoundment. Free water for drinking will remain available in the re-created stream channel and wetlands upstream. Removal of the dam will not affect the upstream wetland habitat, which will continue to provide habitat for water dependent species and support their contribution to the local food web and other natural process. Because of the small size of the open water habitat that will be replaced with an alternative aquatic (stream) habitat, and the continued presence of the upstream wetlands, little to no effect at the population level is expected even for water dependent species. Indeed, by removing the obstruction that the Becker Pond Dam poses to aquatic organisms, it is anticipated that population level effects should be positive, as the newly re-connected brook will allow greater upstream and downstream dispersal.

6.2.3 Fisheries and Aquatic Habitat

Habitat quality for fish is dependent on surface water quantity and quality, sedimentation, and the physical types of habitat present. Impacts to the former two components are discussed in *Section 6.1.1* and *6.1.2*, and the latter two are discussed below.

Sediment deposition effects - As described in *Section 6.1.2*, sediment material stored within the impoundment and mobilized downstream following dam removal would be dispersed by the brook downstream of the dam. Sediment-related impacts to fisheries can be chemical and/or physical. Sediment contaminant testing indicated concentrations below freshwater probable effects concentrations (Inter-Fluve, 2020b). Therefore, downstream exposure of aquatic species to suspended and deposited sediments caused by the release of sediment from the impoundment are unlikely to result in environmental harm. Physical impacts include mostly temporary filling of pools, fining of the channel bed, and burial of other habitat features and/or aquatic species that cannot quickly mobilize and adapt to rapid sediment deposition. For aquatic macroinvertebrates, there may be a reduction in certain species populations resulting from the sporadic and mostly temporary deposition of sandy sediments. This effect will be temporary, since these species have life history traits and reproductive strategies adapted to these types of impacts which can occur due to natural water cold water stream water regimes. Broadcast spawning, stream drift, relocation during adult flying life stages, and crawling all serve to maintain populations of the macroinvertebrates native to coldwater streams.

Sediment repositioning may also impact brook trout spawning redds (nests), burying eggs if dam removal occurs post-spawning. Depending on depth of burial, impacted eggs may experience delayed maturation or mortality. However, no information is available on the amount of natural reproduction that may be occurring in the brook, or locations of redds within the segment below the dam. The Western District fisheries biologist for DFW indicated that October and November are the typical spawning months for brook trout in this stream, and that DFW prefers that projects avoid excessive turbidity during this time. In addition, the "rearing window" of June thru September can be important for trout an excess turbidity should also be avoided. TNC and DER will continue to refine the project schedule with input from DFW during permitting process. Project implementation will be timed to avoid impacts to the existing fish community to the maximum extent practical, based on advice from DFW biologists.

Loss of open water habitat - Removal of Becker Pond dam will eliminate the largest area that potentially does not freeze surface-to-bottom upstream of the dam. This may result in the temporary reduction of brook trout numbers in the upper reaches of the brook, if the population is limited by unfrozen refugia during winter months. However, because of the restored connection to downstream pools deep enough to support overwintering, this impact is likely to be temporary. If the pond does support some warm or cool water fish species, such as centrachids or percids, they will most likely not survive after dam removal. However, their presence is an artifact of the dam construction and creation of the pond, and they are not historically native to western Massachusetts coldwater fishery streams such as the brook that flows into Sages Ravine.

Restoration of Stream Habitat - Removal of the dam will restore the historically continuous connection between upstream and downstream sections of the Brook. For brook trout and other species that cannot traverse the dam as it stands now, this will allow interbreeding between currently separated populations. The restored stream habitat in the former impoundment will also provide an incremental increase in stream habitat. This can result in an increase in the brook trout population long term as more foraging and potential spawning habitat becomes available and individuals can move upstream and downstream past the former dam site. Borroughs et al., (2010) found that the Stronach Dam removal on the coldwater Pine River in Michigan resulted over time in a two-fold increase in the abundance of brown trout (*Salmo trutta*) and rainbow trout (*Oncorhynchus mykiss*). For macroinvertebrates, the restored stream habitat in the former impoundment, after a period of accumulated sediment movement and reestablishment of the natural streambed substrates, will provide additional breeding and foraging habitat for those species adapted to flowing coldwater conditions. Under the assumption that the substrate within the stream channel within the former impoundment will become similar to the conditions immediately upstream and downstream of the pond, the EPT genera, such as collected by Schmidt (2002), will recolonize the stream bed and should increase in numbers. These will offer additional forage for brook trout, and as adults after leaving the water, for birds such as flycatchers, swallows, and local foraging bats.

Conclusion - The project will improve the ecological function of the brook as a coldwater fisheries resource; restoring the natural channel in the currently impounded area; restoring natural water temperatures and dissolved oxygen levels; and restoring natural sediment transport pathways downstream of the current dam. The restored stream channel will also provide additional and improved brook trout habitat and restore connectivity between the upstream and downstream segments of the stream, which should result in increased brook trout abundance. Borroughs et al (2010) stated that their findings strongly indicate that the removal of the dam reduced habitat limitations present when the dam was in place since the abundance of fish increased substantially in upstream and downstream reaches.

While dam removal will result in temporary and short duration pulses of increased suspended sediments, largely temporary and short-term sediment deposition in slow water pools, and loss of pond habitat these effects on downstream macroinvertebrates and brook trout will be temporary and more localized near the dam. The sedimentation may result in a temporary reduction in certain sedimentation intolerant macroinvertebrates, and the increased suspended sediment concentrations may be harmful to some brook trout, with severity greater, closer to the dam. It is anticipated that the flow characteristics of unnamed brook will over time result in a new equilibrium where habitats will have recovered, and aquatic species populations will improve over conditions with the dam and pond in place.

6.2.4 Wetlands

The proposed project will result in a net addition of 234,400 square feet of jurisdictional wetland resource area on the project site. All changes to the wetland resources will take place within the footprint of the existing impoundment. Jurisdictional wetland resources are not present around/within the existing access road and proposed new section of access road.

In the EENF documents, Inter-Fluve identifies resource areas under the jurisdiction of the Massachusetts Wetlands Protection Act Regulations (310 CMR 10.00 *et seq.*) as Bank, LUW, RA, and BLSF, and presents a table of Net Change in Resource Area and Temporary Construction Impact. MassDEP comments on the EENF requested clarification of resource area impacts in the proposed project.

The original EENF filing had two important errors in regard to wetland resource areas at Becker Pond. The first is that the Existing Resource Area Dimension for BLSF is reported as 485,000 sf when in fact the amount of calculated BLSF is actually 48,500 sf (S. Widing, Inter-Fluve pers. comm.). The second error is the fact that the 42,400 sf LUW is double counted as BLSF, rather than being subtracted out of the BLSF polygon that was generated by hydrological modeling. The SEIR addresses the revised proposed wetland resource area impacts below. Impacts are summarized in Table 6-1.

Bank – Under present conditions, Bank resources associated with the Becker Pond impoundment total 1260 linear feet (640 lf of left bank, 620 lf of right bank). The project does not propose changes to the length of Bank resource on the project site following dam removal, but 1110 linear feet of bank (550 lf of left bank and 560 lf of right bank) will be permanently relocated following removal of the impoundment and reestablishment of natural stream course. There will be a temporary construction impact to Bank of 150 linear feet (65 lf of left bank and 85 lf of right bank).

Land Under Water (LUW) – The Becker Pond impoundment is calculated as 42,400 square feet of LUW. Upon removal of the dam and re-establishment of a natural stream channel, the Land Under Water resource area will be 13,200 square feet, representing a loss of 29,200 square feet. The project proposes a temporary construction impact of 13,800 square feet of LUW.

Bordering Land Subject to Flooding – According to the FEMA website, “FEMA has not completed a study to determine flood hazard for the [Town of Mount Washington]; therefore, a flood map has not been published at this time.” Inter-Fluve established the limit of BLSF using hydraulic modeling, both before and following removal of the dam to establish the Existing and Proposed Resource Area Dimension figures shown in the Resource Area Impacts sheet of the Plan Set.

Hydraulic modeling determines a theoretical Existing Resource Area Dimension for BLSF as 48,500 sf, but should subtract the 42,400 sf of LUW, resulting in an actual theoretical BLSF Existing Resource Area Dimension of 6,100 sf. Following removal of the dam, hydraulic modeling shows a theoretical BLSF Proposed Resource Area Dimension of 14,300 sf of BLSF associated with the stream channel. The proposed project will result in an increase of BLSF resource area of 8,200 sf.

Riverfront Area – Under present conditions, there is no Riverfront Area associated with the unnamed stream channel that forms Becker Pond between the up-stream limit of hydraulic impacts, as noted on the Becker Pond Dam Removal Plan (9/4/2020) and the base of the down-stream lip of the existing concrete apron. Following removal of the dam and reestablishment of the natural stream channel, Riverfront Area will be created in accordance with the regulatory definition (310 CMR 10.58(2)(a)1.). The project proposal will result in creation of 255,500 sf of Riverfront Area resources on the project site. During the project construction, there will be 8,000 sf of temporary construction impact to Riverfront Area on the project site.

Table 6-1: *Summary of Wetland Impacts due to the Project*

	Existing Resource Area Dimension	Proposed Resource Area Dimension	Net Change in Resource Area	Temporary Construction Impact
Bank (310 CMR 10.54)				
Length Left Bank (linear feet)	640	640*	0	65
Length Right Bank (linear feet)	620	620*	0	85
Land Under Water (310 CMR 10.56)				
Area (square feet)	42,400	13,200	-29,200	13,800
Bordering Land Subject to Flooding (310 CMR 10.57)				
Area (square feet)	6,100	14,300	+8,200	N/A
Riverfront Area (310 CMR 10.58)				
Area (square feet)	0	255,500	+255,500	N/A

* 550 lf. of Left Bank and 560 lf. of Right Bank will be permanently relocated.

6.2.5 Threatened and Endangered Species

Initial Project designs were reviewed, and NHESP determined work on and around the dam is not anticipated to result in any negative impacts to NHESP Priority or Estimated Habitat, or to result in negative impacts to downstream Priority Natural Communities. Please see *Section 9.2.5* for further details on the ongoing consultation with NHESP, and mitigation measures proposed to date. Correspondence with NHESP to-date is provided in **Appendix F**. Please note that consultation with NHESP is ongoing and will include the future submission of a copy of the Notice of Intent (NOI) for the proposed Project.

As previously noted, the project area lies within NHESP designated Priority Habitat of Rare Species and Estimated Habitat of Rare Wildlife. Initial consultation with NHESP indicates the listed species known to be present within the Project area is an upland species that will not be affected by dam removal but has some potential to be impacted by access road construction and use. Additional consultation with NHESP will occur during the permitting process to determent the extent of any potential impacts, as well as the appropriate mitigation measures to avoid and minimize impacts. Recommendations and requirements outlined by NHESP will be followed during the planning, construction, and restoration phases of the Project.

6.3 Human Environment

6.3.1 Visual/Aesthetic Characteristics

By removing the Becker Pond Dam, the proposed Project will permanently alter aesthetics of the impoundment area. While TNC recognizes the aesthetic value of Becker Pond, the removal of the dam and the associated elimination of the existing open water will result in a restored brook with exceptional conservation and recreational value, will restore a coldwater fisheries resource, improve resiliency amidst climate change, and provide new spawning habitat for fish including brook trout. Aesthetic enjoyment of the pond would be lost, but the natural forest and stream environment provide comparable opportunities to appreciate nature.

6.3.2 Recreational Resources

While dam removal will alter existing recreational opportunities associated with Becker Pond, it will also afford new opportunities for nature-based passive recreation opportunities in an undeveloped setting. Though ice-skating and pond fishing opportunities will be lost, improved stream fishing will likely be gained, and recreational opportunities including birdwatching, hiking, snowshoeing, and cross-country skiing will be maintained. In addition, TNC intends to continue trail construction at the southern end of its Mount Plantain Preserve, and the proposed Project includes trail work in the vicinity of Becker Pond that will be completed in conjunction with dam removal. This will increase access opportunities for passive, nature-based recreation.

The larger pools downstream in Sages Ravine that are used by the public for recreation will be maintained through the Preferred Alternative, which includes excavation of a pilot channel in the sediments behind the dam to minimize the natural transport of sediment from the impoundment into the downstream river system. This will reduce the potential for sediment impacts to Sages Ravine. While there are a number of large and deep pools between the confluence and the footbridge crossing at the Sages Ravine campsite that may fill temporarily following dam removal, the presence of large boulders will constrain the flow and create turbulence that should help pools scoured out. Moreover, several pool and low-flow stream sections that are present upstream of Sages Ravine are likely to trap much of the sediment released by dam removal, releasing it more slowly over time. In addition, the deepest pools are located immediately downstream of bedrock or boulder constrictions that create cascades and falls, causing turbulence that produces scour. While there may be deposition at the tails of these scour pools, some pool depth is likely to be maintained at the toes of the cascades and falls where turbulence is greatest.

The Project site and associated recreational resources will remain open to the public after project completion. The section of new access road proposed to join the existing access road approximately 700 lf from East Street is intended to be converted to a permanent pedestrian-only trail, reducing the construction width using native plantings and/or seeding. Additionally, by removing a dam that is in poor condition with several critical issues, the Preferred Alternative will reduce the potential risks to public safety associated with dam failure, including risks posed to users of the AT located downstream.

6.3.3 Traffic, Transit, and Pedestrian/Bicycle Access

There are no permanent impacts anticipated with this Project in relation to traffic and transit. Temporary impacts associated with construction traffic are anticipated to include the transport and use of heavy equipment (e.g., backhoes and dump trucks), over the access road and East Street. Heavy vehicle use during construction is likely to result in increased noise and dust, particularly on the unpaved portion of East Street. These impacts will be minimized as far as practically possible using contractor-required BMPs and will be short-term in their duration. The off-site hauling of material is anticipated to cause some wear and tear on the access road and East Street. If damage is sustained as a result of the Project, the contractor will be responsible for repairing any damage, including the filling of ruts or potholes.

There is no traffic demand associated with the existing site, nor with the Project, other than temporary construction vehicle access to the Project site through TNC property and East Street. Trip generation during construction will be limited to daily worker and occasional deliveries at key points during the construction.

6.3.4 Historic Structures or Districts, and Archaeological Sites

As discussed in Section 5.3.4, the BUAR conducted a preliminary review of its files, the Massachusetts Historical Commission's MACRIS, historic maps, and secondary literature sources to identify known and potential submerged cultural resources in the proposed project area. Based on the results of this review and the nature of the proposed project, the Board expects that the proposed Project is unlikely to impact submerged cultural resources. A Project Notification Form was also submitted to the Massachusetts Historical Commission and the Stockbridge Munsee Mohican Tribal Historic Preservation Extension Office, and both entities indicate that they do not expect upland archaeological resources to be impacted by the project. Please see Historic and Cultural Correspondence documents in **Appendix G.**

Additionally, the Preferred Alternative is designed to restore the right bank immediately downstream of the existing dam to resemble its original estimated contours by reusing excavated earthen material on site. Field evidence suggests that a low spot on this bank was a borrow area for the original dam construction. The proposed contours reflect an intent to restore the historical borrow pit using material excavated form the impoundment. Material placement will tie into the existing contours downstream where the bank is undisturbed, thus restoring the bank in this location.

6.3.5 Land Use

The proposed Project will not change land use, and the trails and other recreational opportunities afforded by TNC's Mt. Plantain Preserve will continue to be available to the public throughout the Project, other than the immediate area of the pond and dam where short term, periodic access restrictions will be required to protect the public from the construction activities and equipment.

6.3.6 Socioeconomics and Environmental Justice

There are no anticipated permanent socioeconomic impacts associated with the Project, as the Project will not result in any land use changes within the area surrounding the pond. The Project seeks to restore fish passage and valuable wildlife habitat while removing a public safety hazard. Dam removal will also eliminate the costs and liabilities associated with the failing dam. No changes to economic status, jobs, employment, housing or community resources are expected to be associated with this Project, which is an ecological restoration project.

6.3.7 Climate Change, Sustainability and Resiliency

The proposed Project will eliminate the threat of catastrophic dam failure, thereby making the brook more resilient and increasing safety downstream. Future increases in the frequency and intensity of precipitation events and peak flood flows are anticipated at the Becker Pond Dam project site due to climate change. Improved hydrologic connectivity within the natural stream system is expected to mitigate flood risks associated with the increased storm frequency and duration. Whereas dams and associated impoundments can be stressed beyond their storage capacity by increased storm frequency, natural riverine channels can adapt to flow alterations. The restored continuity of water flow and sediment transport due to dam removal will allow the brook to adjust naturally and more incrementally to changes in precipitation through time.

Impoundments formed by dams convert riverine habitat it to slower moving and lake-like habitats, which trap sediment and nutrients. The water impounded behind the dam tends to be warmer, reducing dissolved oxygen and water quality. Dam removal reverses these impacts, restoring the natural sediment and nutrient transport regimes, improving water quality, and improving aquatic species passage within the river. Removal of the dam will also increase the amount of coldwater habitat available to temperature sensitive species, stream dependent species within the brook. Larger habitat areas provided greater resiliency for the species that depend on them as larger habitat have a greater diversity of microhabitats as well as simply more space. Additionally, the decomposition of organic material accumulated behind dams can also be a source of GHG emissions, which will be eliminated by removal of the dam.

6.4 Rare or Unique features

6.4.1 Sages Ravine

The primary potential impact of the Project on Sages Ravine is increased sedimentation that could affect pool depths and water clarity. As described in greater detail in *Sections 3.4* and *6.3.2*, the Preferred Alternative was chosen specifically to minimize these impacts. The pilot channel will minimize the natural transport of sediment from the impoundment, reducing the potential for sediment impacts to the larger pools in Sages Ravine used by the public for recreation. As described in *Sections 6.1.2* and *6.2.3*, any sedimentation impacts that do occur will be temporary. TNC will work with interested parties, including the Appalachian Trail Conservancy (which manages the downstream area around Sages Ravine) and UMass, which has some current studies of the system on going, to design and implement appropriate monitoring for downstream sediment release. Further details will be provided during future permit applications, and as the Project design progresses. The potential impacts and safety hazards associated with catastrophic dam failure will also be removed through the Preferred Alternative.

6.4.2 NHESP Designated Features

The NHESP-designated Priority and Estimated Habitats that encompass the Project also encompass most of the entire Town of Mount Washington. The impacts to vegetation in the construction footprint are unlikely to have a measurable effect on the overall quality of these habitats because they will be limited in size and temporary in nature. Likewise, the conversion of the pond habitat to stream habitat is also unlikely to affect habitat quality. The species present in these NHESP-designated habitats are specifically adapted to forested landscapes dissected by cold water streams. The listed species specifically associated with the Becker Pond area is an upland species and will not be affected by the change in aquatic habitat types present.

Because the new section of access road and the footprint of the impoundment will be revegetated when construction of the Project is complete, the Project will not cause forest fragmentation, and there will be no long-term effect on the 7500-acre BioMap2 Forest Core and 35,000-acre BioMap2 Core Habitat and associated Critical Natural Landscape which surround the Project area. The BioMap2 Core Habitat Wetlands associated with the brook north of the Becker Pond area will not be affected by dam removal because the dam does not currently influence the water regime that far upstream. Likewise, the NHESP-designated Hemlock Ravine Priority Natural Community downstream from Becker Pond will not be impacted by the Project because dam removal will also not cause any changes to the water regime which this vegetation type depends.

6.4.3 Schenob Brook ACEC

The restoration of stream habitat in the Becker Pond impoundment footprint will return this area to its natural state and improve the brook's function as a coldwater stream. The purpose of the ACEC Program is to preserve, restore, and enhance critical environmental resources and resource areas of the Commonwealth of Massachusetts. Therefore, the Project contributes to and is aligned with the ACEC Program's goals.

7 STATUTORY AND REGULATORY STANDARDS AND REQUIREMENTS

This Project is subject to MEPA review and a mandatory EIR pursuant to 301 CMR11.03(3)(a)(4) because it requires Agency Actions and will result in the structural alteration of an existing dam that causes a decrease in impoundment capacity. The also exceeds several ENF thresholds at 301 CMR 11.03(3)(b)(1)(f) and 301 CMR 11.03(11)(b) because it will alter one half or more acres of any other wetlands and is located within a designated ACEC (respectively). The Project proponent's request in the EENF to waive the EIR was rejected, but preparation of an SEIR was accepted.

The Project requires a Section 401 Water Quality Certification (WQC) and a Chapter 91 (c.91) Permit from the Massachusetts Department of Environmental Protection (MassDEP). The proposed project constitutes an Ecological Restoration Project and is eligible for a Restoration Order of Conditions pursuant to 310 CMR 10.13 *et seq*. The project meets the definition of such a project at 310 CMR 10.04, is a Dam Removal Project (310 CMR 10.13(2)), and the Applicant will submit a Notice of Intent that meets all applicable requirements of 310 CMR 10.12. The project meets all of the Eligibility Criteria detailed at 310 CMR 10.13(1). Specifically, the project proponent will:

- Submit for publication in the Environmental Monitor a written notification 14 days prior to filing a Notice of Intent for an Ecological Restoration Project, pursuant to 310 CMR 10.11(1);

- Continue its consultation with NHESP to evaluate opportunities for rare wildlife habitat enhancement that has been considered in earlier project evaluation, and provide written documentation of a finding of no adverse impact to state-listed rare wetlands wildlife, pursuant to 310 CMR 10.11(2);

- Work with the Division of Fisheries and Wildlife to obtain a written determination as to whether the proposed work will require a Time of Year restriction because the in-water work will involve generation of silt (310 CMR 10.11(5));

- Obtain a Water Quality Certification pursuant to 314 CMR 9.00 prior to submitting a Notice of Intent for the project (310 CMR 10.11(6) and 310 CMR 10.13(1)(f)).

The Project requires an Order of Conditions from the Mt. Washington Conservation Commission (or in the case of an appeal, a Superseding Order of Conditions from MassDEP). It also requires authorization from the U.S. Army Corps of Engineers (ACOE) under the General Permits for Massachusetts in accordance with Section 404 of the Clean Water Act (CWA).

The project is receiving funding from the Division of Ecological Restoration (DER). The project is receiving State Financial Assistance from the Commonwealth, through DER and the Massachusetts Environmental Trust. Therefore, MEPA jurisdiction for the project is broad and extends to all aspects of the project that are likely, directly or indirectly, to cause Damage to the Environment as defined in the MEPA regulations.

A permit for the construction of a driveway or road abutting or intersecting a public way (Mount Washington Zoning Bylaw §215-22), will be required from the Mt Washington Board of Selectmen. Land transfers are not required for the Project, which lies wholly within property owned by the proponent, TNC.

8 MITIGATION MEASURES

Please see *Section 9*, which describes the measure to avoid, minimize and mitigate the Projects impacts, in relation to the regulatory requirements of the Project. Implemented of these mitigation measures is based on the following factors:

- The Project is designed to provide a benefit to public safety and the ecological function of the Schenob Brook Watershed. As such, no compensatory mitigation for the Project itself is required or provided.

- Short-term impacts associated with the natural re-distribution of sediments after dam removal will occur, and will attenuate naturally, as the restored stream system reaches equilibrium, and the stream's biota adjust to the new equilibrium. The Preferred Alternative was chosen to minimize the potential for sedimentation impacts and support the stream system's return to equilibrium.

- Short-term impacts associated with construction activities will occur, and actions to minimize and mitigate these impacts will be incorporated into construction activities. These measures will be designed in compliance with applicable Statutory and regulatory requirements, as identified in *Section 7*, and are described in *Section 9*. They will be paid for by the Project proponent as part of the Project costs.

- Site-specific water management, concrete removal, and sediment dewatering plans will be developed in consultation with DER and DEP to minimize impacts, as part of the permitting process.

- To ensure that the BMPs identified in *Section 9* are incorporated into the Project, the construction contractor will be required to submit a Construction Operations Plan (COP). This document will reference the standards put forth in the *MassDOT Standards Specifications and Supplements – current edition*. The COP will include a Spill Prevention Plan, Water Management Plan, and Erosion and Pollution Control Plan which will address dust control, erosion control, noise control, solid waste disposal, control of chemical waste (e.g., machine fuels, lubricants), and forbid burning. An example of the technical specification typically required of contractors is provided in **Appendix E.**

- As stated in the EENF (Inter-fluve 2020), the Project proponent has consulted with Andrew Madden, the Western District Supervisor and Leanda Fontaine, the Western District fisheries biologist for DFW about this project. They have informed us that October and November are the typical spawning months for brook trout in this stream. DFW prefers that projects avoid excessive turbidity during this time. In addition, the "rearing window" of June thru September can be important for trout and excess turbidity should also be avoided. While DFW has been lenient with time-of-Year restrictions on dam removal and river restoration projects in the past, TNC and DER will continue to refine the project schedule with input from DFW during the MEPA and permitting processes. Project implementation will be timed to avoid impacts to the existing fish community to the maximum extent practical.

9 PROPOSED SECTION 61 FINDINGS AND MITIGATION

9.1 Introduction

As required by 301 CMR 11.07(6)(k) of the Massachusetts Environmental Policy Act (MEPA), this Section presents the proposed Section 61 Findings for each agency action to be taken on the Becker Pond Dam Removal Project ("the Project"). While The Nature Conservancy (TNC) will continue to consult with certain agencies concerning mitigation, this SEIR contains the most up-to-date information on the Project's mitigation measures. As described below, TNC has reviewed the environmental effects of the project. Based on the review, TNC finds that all feasible measure will be incorporated in the Project first to avoid and then minimize those effects.

9.2 Proposed Section 61 Findings

MEPA regulations 301 CMR 11.12(5) stipulate that in "*accordance with G.L. c.30, §61, any Agency that takes Agency Action on a Project for which the Secretary required an EIR shall determine whether the Project is likely, directly or indirectly, to cause any damage to the environment and make a finding describing the damage to the environment and confirming that all practicable measures have been taken to avoid or minimize the damage to the environment.*" The Section 61 Findings are incorporated into the conditions or restrictions to the relevant permit or authorization. The following proposed Section 61 Findings have been prepared by the Project Proponent and are intended to assist the state permit-issuing agency in fulfilling its obligations in accordance with G.L. c. 30, §61. These Findings are listed by the Jurisdictional Agency / Department and Permit Type.

9.2.1 Project Description

The Becker Pond Dam Removal project (the Project), EEA #16226, is located in Mt. Washington, MA, which is within the Housatonic River watershed and the Schenob Brook Drainage Basin Area of Critical Environmental Concern (ACEC). The dam and the surrounding forested property are part of the 800-acre Mount Plantain Preserve, owned by TNC. TNC proposes to remove the Becker Pond Dam and restore the unnamed brook that joins Schenob Brook downstream of Sages Ravine. Becker Pond Dam is the only obstruction on this otherwise free-flowing brook, and the removal of the dam will restore natural flow of the unnamed brook, improve fish passage, and eliminate a source of thermal stress on an important designated coldwater fishery stream. The project involves the excavation and removal of the dam and the related excavation of a stream channel within the deposited and accumulated sediments behind the dam. A visual inspection completed in 2016 found the dam in poor condition, with several critical safety and structural issues. As such, the primary goals of the Becker Dam Removal Project are to restore aquatic and hydrologic connectivity through the site and eliminate the safety hazard posed by the dam. TNC and its partners seek to implement a simple, low-cost solution to meet these stream restoration and safety goals.

Table 9-1 (below) provides a summary of anticipated state permits, approvals, and reviews. Proposed Section 61 Findings are then addressed for each agency.

Table 9-1: *Anticipated permits, approvals, and reviews*

Agency / Department	**Permit / Approval / Review**	**Section within the Draft Section 61 Findings**
Executive Office of Energy and Environmental Affairs	MEPA Review (this filing)	N/A
U.S. Army Corps of Engineers (USACOE)	Section 404 Dredge and Fill Permit	1.2.3
Massachusetts Historical Commission (MHC)	State Register Review and Section 106 Review	1.2.4
Mass Division of Fisheries and Wildlife – Natural Heritage and Endangered Species Program (NHESP)	TBD (MESA Review Checklist? and Determination from NHESP – need input, if available)	1.2.5
Massachusetts Department of Environmental Protection (MassDEP)	Section 401 Water Quality Certification (WQC) and Chapter 91 Dredging Permit – Combined Application (BRP WW 26)	1.2.6
MassDEP	Wetlands: Restoration Order of Conditions (OOC) 310 CMR 10.00	1.2.7
MassDEP	Air Pollution: 310 CMR 7.00	N/A
MassDEP	Solid Waste: 310 CMR 16.00	1.2.9
MassDEP	Hazardous Waste: 310 CMR 30.00	N/A
MassDEP	Bureau of Waste Site Cleanup: 310 CMR 40.00	1.2.11
Mt Washington Conservation Commission	Wetlands Protection Act: Order of Conditions (OOC)	1.2.7
Mt Washington Board of Selectmen	Permit for the construction of a driveway or road abutting or intersecting a public way (Mount Washington Zoning Bylaw §215-22).	1.2.12

9.2.2 MEPA History

TNC filed the Expanded Environmental Notification Form (EENF) for the Becker Dam Removal project on May 29, 2020. The EENF (EEA #16226) was noticed in the Environmental Monitor on June 10, 2020, and was available for public comment through June 30, 2020. In response to a request from MEPA staff for additional information to support the EENF, an additional document was submitted to MEPA on July 2, 2020. The Secretary's Certificate on the EENF for the Project was issued on July 31, 2020 and determined that the project required the preparation of an Environmental Impact Report (EIR). To streamline the review of the Project (which has been identified as a designated Priority Project by the Division of Ecological Restoration, DER), the Secretary determined that a Single EIR would be sufficient, rather than a Draft and Final EIR, pursuant to 11.06(8).

9.2.3 USACOE: Section 404 Dredge and Fill Permit

Pursuant to Section 404 of the Clean Water Act (CWA), activities which will result in the discharge of dredged or fill material into waters of the United States require a permit from the U.S. Army Corps of Engineers (ENG Form 4345, Application for a Department of the Army Permit).

Project Impacts: Impacts related to the Section 404 Individual Permit include the mechanical removal of a portion the estimated 550 cy of impounded sediment that has been determined to be readily mobile, through creation of a pilot channel through the impoundment. For planning purposes, the volume to be removed is assumed to be 525 cy, but the exact volume and extent of channel excavation will be determined in consultation with the permitting agencies and will reflect a balance between controlling short term impacts and the feasibility of sediment removal from the site. Some of the excavated sediments will be re-used for shaping and grading on-site, and any excess sediments will be dewatered and hauled to a landfill for disposal.

Project Mitigation: Mitigation was considered as a matter of course during the planning and design process as an overall approach to avoiding impacts whenever possible. In compliance with the *404(b)(1)* guidelines, the Project has been designed to minimize environmental impacts, comply with all State and Federal Water Quality Standards and the Endangered Species Act, and to take the necessary precautions to avoid and reduce impacts to waters and wetlands. Please refer to the following sections of the *Section 61 Findings* for further details on Section 401 WQC (*Section 1.2.6*), Wetlands: 310 CMR 10.00 – Restoration Order of Conditions (*Section 1.2.7*), and MESA Review Checklist and Determination from NHESP (*Section 1.2.5*).

A Project Alternatives Analysis was conducted which included scenarios involving the complete mechanical removal of all accumulated sediments, the partial mechanical removal of some accumulated sediments, or the passive release of the readily mobile portion of the accumulated sediments downstream after dam removal. The Project has been designed to reduce environmental impacts and minimize the volume of sediment released downstream, through the mechanical removal of approximately 525 cy of the readily mobile sediment from behind the dam. Sediments have been tested for toxicity and contamination (see **Appendix D** – 75% Design Report for the full sediment analysis), and all sediment samples conformed with Environmental Standards.

9.2.4 MHC: State Register Review and Section 106 Review

Pursuant to Section 106 of the National Historic Preservation Act of 1966, any projects that require funding, licenses, or permits from federal agencies must be reviewed in compliance with Section 106, which requires federal agencies to take into account the effects of their actions on historic properties. In addition, Project requiring state finding, licenses or permits must be reviewed by MHC in compliance with Massachusetts General Laws Chapter 9, sections 26-27C.

Project Impacts: There are no structures, historic or otherwise, within 0.25 miles of the Project site. To identify known and potential submerged cultural resources in the proposed project area as part of the MEPA review process (EOEA #16226), the Board of Underwater Archaeological Resources (BUAR) conducted a preliminary review of its files, the Massachusetts Historical Commission's Massachusetts Cultural Resources Inventory System (MACRIS), historic maps, and secondary literature sources. BUAR provided a letter dated July 24, 2020, indicating that no record of any underwater archaeological resources was found and that the proposed Project "*is unlikely to impact submerged cultural resources*." A Project Notification Form was also submitted to the Massachusetts Historical Commission and the Stockbridge Munsee Mohican Tribal Historic Preservation Extension Office, and both entities indicate that they do not expect upland archaeological resources to be impacted by the project.

Project Mitigation: Should heretofore unknown archaeological resources be encountered during the course of work, TNC will take steps to limit adverse effects (take care to not further disturb the archaeological resource and note its precise location) and notify the Board and the Massachusetts Historical Commission, as well as other appropriate agencies, immediately in accordance with the Board's Policy Guidance for the Discovery of Unanticipated Archaeological Resources.

9.2.5 NHESP – Threatened and Endangered Species

Portions of the proposed Project, including the proposed site for the construction of a new access road, are located within Natural Heritage and Endangered Species Program (NHESP) Priority and Estimated Habitats for multiple species. In addition, downstream of the Project area the brook flows into a NHESP-designated Hemlock Ravine Priority Natural Community. As such, TNC has initiated a consultation process with NHESP, which will continue throughout the Project design and implementation.

Project Impacts: Based on initial consultation with NHESP (from Project designs submitted in August 2018), the proposed work on and around the dam is not anticipated to result in any negative impacts to NHESP Priority or Estimated Habitat, or to result in negative impacts to downstream Priority Natural Communities. Impacts from the construction of the new access road will be mitigated, as described below.

Project Mitigation: TNC is in ongoing consultation with NHESP to determine the most appropriate mitigation solutions for the proposed Project. Mitigation options are likely to include, but not be limited to:

- Converting the temporary access road into a permanent pedestrian trail, which will be reduced from the construction width using native plantings and / or seeding along the road margins;
- Restoring all disturbed areas to their pre-existing grades, contours, and vegetation, as far as practicably possible, through appropriate native plantings and / or natural regeneration;
- Implementing all habitat protection and mitigation measures recommended by NHESP during Project design and construction, and;
- Providing ongoing construction monitoring and pre-construction training for construction personnel as needed, to ensure that rare species are avoided.

9.2.6 MassDEP: Section 401 Water Quality Certification (WQC) and Chapter 91 Dredging Permit

Pursuant to the requirements of Section 401 of the Clean Waters Act and Chapter 91 of the Massachusetts Waterways Regulations, TNC proposes to file a joint application with MassDEP for a combined Water Quality Certification (WQC) and Chapter 91 Dredging Permit, for the dredging of land under water (LUW) and discharge of dredged materials into Waters of the U.S. The proposed project constitutes an Ecological

Restoration Project and is eligible for a Restoration Order of Conditions pursuant to 310 CMR 10.13 et seq. The project meets the definition of such a project at 310 CMR 10.04, is a Dam Removal Project (310 CMR 10.13(2)), and the Applicant will submit a Notice of Intent that meets all applicable requirements of 310 CMR 10.12. The project meets all of the Eligibility Criteria detailed at 310 CMR 10.13(1).

Project Impacts: The proposed Project will require the mechanical dredging of 550 cy of sediment from behind Becker Pond Dam. This sediment will be re-used for shaping and grading on-site, and any excess sediments will be dewatered and hauled to a landfill for disposal. The remaining sediment built up behind the dam (an estimated 950 cy), will be passively released downstream following dam removal. In addition, the Project will permanently impact 42,400 sf of Land Under Water (LUW) currently associated with Becker Pond. Once the dam is removed, this area of LUW will be lost, and a new Riverfront Area and Bank will be created in accordance with the regulatory definitions of (310 CMR 10.58(2)(a)1.).

Project Mitigation: A detailed avoidance and mitigation plan will be prepared by TNC as part of the Section 401 and Chapter 91 permit application process, and in accordance with MassDEP guidelines and recommendations. Mitigation options are likely to include, but not be limited to:

Protection of wetland resource areas:

- Appropriate sediment and erosion controls (such as straw wattles, silt fence or silt socks), will be installed between all work areas wetland resource areas to minimize sediment run off entering the brook.
- Construction mats will be used to provide access through wetlands, across streams, and within other sensitive areas to minimize compression of soils, rutting, and disturbance of vegetation.
- When not in operation, all equipment and materials will be staged in designated staging areas, well away from sensitive wetland resource areas.
- All temporarily disturbed areas within wetlands and their buffer zones will be appropriately stabilized (e.g., with mulch or other appropriate control), and seeded with a native conservation seed mix.

Sediment removal and pilot channel stabilization:

- A sediment characterization study was conducted by (Inter-Fluve 2020b), within the Becker Pond Dam Impoundment, in accordance with 401 WQC regulations. The material sampled was composed of sand, silt, and clay with a median grain size for all samples in the medium sand range. The watershed has had very little development or agriculture, and the sampling results concluded that there is low potential for the impounded sediment to contain oil or other hazardous materials. In addition, chemical testing results show that concentrations of the majority of the pollutants tested were below detection levels.
- In order to reduce sediment impacts to downstream water quality, TNC is proposing to excavate a pilot channel behind the dam, removing approximately 550 cy of sediment prior to dam removal. This will reduce the volume of sediment being mobilized downstream by the dam removal and will provide native material for on-site grading and landscaping. The pilot channel will adhere to the principles, methods, and techniques of the *Natural Resources Conservation Service (NRCS) Stream Restoration Design Handbook*, National Engineering Handbook Part 654 (Released September 20, 2007). Provisions for pilot channel bank stabilization will be included in the WQC application.

- TNC proposes to dispose of the dredged material on-site in accordance with MassDEP policy, as applicable. The dredged spoils shall be managed and disposed in accordance with conditions of a 401 WQC, as detailed in the MassDEP Interim Policy COMM 94-007 Sampling, Analysis, Handling & Tracking Requirements for Dredged Sediment Reused or Disposed at Massachusetts Permitted Landfills.

Monitoring:

- A detailed monitoring plan will be devised as part of the WQC and Chapter 91 permitting process, and all recommendation made by MassDEP will be adhered to. TNC will conduct monitoring of site conditions and water quality, during and after construction, as required in the applicable permits.
- The site is currently part of a University of Massachusetts study that is examining the effect of dam removal on stream systems. The study is led by Dr. Allison Roy, Assistant Unit Leader, U.S. Geologic Survey, Massachusetts Cooperative Fish and Wildlife Research Unit and measures water temperature, quality, and the macro-invertebrate community before and after dam removal.
- The Appalachian Trail Conservancy (ATC), which co-manages the downstream area around Sages Ravine with TNC, have offered to provide monitoring of stream flow and sediment release at Sages Ravine. TNC will partner with ATC, as appropriate, to meet monitoring commitments related to permitting requirements.

9.2.7 MassDEP: Wetlands – Restoration Order of Conditions (OOC) and Mt Washington Conservation Commission OOC

In accordance with 310 CMR 10.00, the proposed Project will require the filing of an Ecological Restoration Project Notice of Intent (NOI) with MassDEP and the Mount Washington Conservation Commission. The Project will be required to meet the provisions of the Wetlands Protection Act (WPA), the Wetlands Regulations (310 CMR 10.00), and associated performance standards, as well as any requirements stipulated by the Mount Washington Conservation Commission.

Project Impacts: Anticipated Project impacts include; loss of 42,400 sf of Land Under Water (LUW), currently associated with Becker Pond; creation of ~8,200 sf estimated Land Subject to Flooding (based on hydrological modelling, as FEMA data is not available for this area); creation of ~ 255,500 sf of new Riverfront Area and Bank (in accordance with the regulatory definitions of *310 CMR 10.58(2)(a)1.*), in place of the lost LUW, and; temporary impacts to existing Bank, Riverfront Area and Land Subject to Flooding, associated with dam removal activities. In addition, dam removal will result in sediment pulses downstream, as accumulated sediments are released from behind the dam. The primary impacts of sediment pulses are likely to include filling of pools, fining of the channel bed, and burial of other habitat features and/or aquatic species that cannot quickly mobilize and adapt to rapidly changing conditions. Most deposition is likely to be temporary; however, permanent deposition of a portion of the mobilized sediment may occur in secondary channels and low-lying floodplain areas where the valley widens locally. These effects would likely decrease with time and with distance downstream as the inputs of sediment are attenuated through repeated deposition and erosion.

Project Mitigation: TNC will employ appropriate Best Management Practices (BMPs) to ensure that the Project construction is completed in accordance with applicable WPA regulations, and that impacts to wetland resource areas are avoided or minimized. In addition to the mitigation measures outlined in *Section*

2.6 (Conformance with WQC and Chapter 91 regulations), mitigation measures for conformance with the WPA will include:

- Install, inspect, and maintain erosion and sediment controls and other applicable construction BMPs to minimize the potential for erosion and sedimentation;
- Keep stockpiled materials outside of wetland resource areas and Buffer Zones;
- Backfill any excavations as work is completed;
- Limit equipment access to designated access roads and work areas, which will be appropriately stabilized and monitored;
- Stabilize and restore temporarily disturbed areas, in accordance with the requirements of the WPA, and;
- Comply with local, state and federal permit conditions, as issued with the Order of Conditions from USACE, MassDEP, and the Mount Washington Conservation Commission.

The Project will comply with the requirements set forth in *310 CMR 10 13(1)* for an Ecological Restoration Order of Conditions, including furthering at least one interest of the WPA, avoiding impacts to resource areas and the interests of the WPA to the fullest extent possible, using appropriate erosion and sediment controls, result in no increase in flooding risk or storm damage, and result in no substantial reduction in the capacity of a resource area to serve habitat functions.

9.2.8 MassDEP: Air Pollution

The Becker Pond Dam Removal Project is not anticipated to result in significant impacts to air pollution, either during construction or as a long-term result of the Project. In accordance with MassDEP's review of the Project EENF (July 20, 2020), received during the public comment period, TNC will comply with all applicable Air Pollution regulations outlined in 310 CMR 7.01, 7.09 and 7.10.

Impacts: Air pollution impacts from the Project will be limited to the construction period and are anticipated to be small. Greenhouse Gas Emissions (GHG), dust, and noise will be associated with the use of vehicles and heavy equipment during construction.

Mitigation: TNC will employ BMPs to minimize air pollution during construction. All construction and demolition activities will conform to current Air Pollution Control Regulations. TNC will implement measures to alleviate dust, noise, and odor nuisance conditions that may occur during the construction and demolition activities. Such measures will comply with the MassDEP's Bureau of Air and Waste (BAW) Regulations 310 CMR 7.01, 7.09, and 7.10. MassDEP recommends that the Project proponent participate in the MassDEP Diesel Retrofit Program. All non-road engines shall be operated using only ultra-low sulfur diesel (ULSD) with a sulfur content of 15 ppm pursuant to 40 CFR 80.510.

9.2.9 MassDEP: Solid Waste

Impacts: Solid waste generated by the Becker Pond Dam Removal Project will include old construction materials associated with the dam (concrete, wood), and construction materials being brought onto the site to perform dam removal activities (stone for access roads, sediment and erosion controls, fencing etc.). In addition, the project will generate approximately 550 cy of sediment. While the intention is to use this sediment on-site for grading and landscaping purposes, any excess sediment will also require off-site disposal.

Mitigation: TNC shall properly manage and dispose of all solid waste generated by the Project, pursuant to 310 CMR 16.00 and 310 CMR 19.000, including the regulations at 310 CMR 19.017 (waste ban). It is not anticipated that asbestos or asbestos-containing materials will occur on the Project site, but in the event that any such materials are found, TNC will manage these waste materials as special wastes in accordance with 310 CMR 19.061. Any asphalt, brick and concrete (ABC) generated through crushing and reuse on-site will be handled in accordance with MassDEP regulation and policy. Any discarded objects encountered during the demolition of the former dam shall be removed from the site for disposal as Solid Waste or recycling as appropriate.

9.2.10 MassDEP: Hazardous Waste

Impacts: The Becker Pond Dam Removal Project is not anticipated to result in the generation of any hazardous waste, with the possible exception of waste oil and/or vehicle and equipment lubricants. Sediment sampling and analysis for potentially hazardous contaminants was conducted in May 2019, and no hazardous levels of contaminants were detected.

Mitigation: Should any hazardous wastes be generated by the demolition and earthwork activities, wastes will be properly managed in accordance with 310 CMR 30.00. If any hazardous waste, including waste oil, is generated at the site, the proponent must ensure that such generation is properly registered with the Department and managed in accordance with 310 CMR 30.00. In addition, appropriate BMPs will be employed to ensure that any oil, fuel, or other hazardous materials generated by construction equipment, are properly contained and do not enter wetlands (in accordance with the WPA and 310 CMR 10.00).

9.2.11 MassDEP: Bureau of Waste Site Cleanup

Impacts: There are no contaminated or previously contaminated sites within the vicinity of the Becker Pond Dam Removal Project.

Mitigation: *Spills Prevention:* A spills contingency plan addressing prevention and management of potential releases of oil and/or hazardous materials from pre- and post-construction of the dam removal activities will part of the Construction Operations Plan. The plan will be presented to workers at the site and enforced. The plan will include but not be limited to, refueling of machinery, storage of fuels, and potential releases. BMPs will be employed to ensure that any oil, fuel, or other hazardous materials generated by construction equipment, are properly contained and do not enter wetlands (in accordance with the WPA and 310 CMR 10.00). Mitigation measures will include, but not be limited to:

- Installing designated staging areas for all equipment and materials storage. Staging areas will be located within upland areas, well away from wetland resource areas and their buffer zones. Staging areas will be surrounded by appropriate sediment controls.
- Where possible, all refueling of vehicles and equipment shall be conducted in a designated staging area, away from wetland resources. If this is not possible, appropriate containment will be used to ensure no hazardous materials enter the environment.
- All vehicles will be equipped with spill release kits.

9.2.12 Mt Washington Board of Selectmen: Permit for the construction of a driveway or road abutting or intersecting a public way

Impacts: In order to provide access for construction vehicles and equipment, a new access road is proposed as part of the Becker Pond Dam Removal Project. The new access road will begin at East Street and join an existing access road on the TNC property, approximately 700 linear feet from East Street. The new section of access will also include a staging area at the East Street entrance.

Mitigation: Once the Project is complete, TNC intends to convert the access road to a permanent pedestrian-only trail, reducing the construction width using native plantings and/or seeding. A small amount (2 spaces) of public parking will be provided at the entrance of the pedestrian trail.

Additionally, following standard construction practices, the contractor hired to conduct the dam removal project will be responsible for mitigating road-related impacts (dust) during construction and repairing construction-related damage after project construction is complete, if needed. The Town and contractor will document and agree upon existing road conditions prior to beginning construction.

9.3 Summary of Mitigation Commitments

Table 9-2 (below) provides a summary of Project mitigation measures to address both permanent and construction-related, temporary impacts. More specific, detailed mitigation measures will be developed as the Becker Dam Removal Project advances and would be reviewed by the appropriate regulatory agencies as part of project permit applications. Temporary, short-term impacts from construction activities will be mitigated to the extent practicable. Construction-period mitigation requirements will be incorporated into the final design plans and specifications that will serve as the basis for construction contract documents and specifications.

Table 9-2: *Summary of Mitigation Commitments*

Category	Agency	Mitigation Measure	Schedule
Wetlands	MassDEP, Mt Washington Conservation Commission	Install appropriate sediment and erosion controls prior to beginning work	Prior to construction
		Follow all specific requirements provided by MassDEP and the Mt Washington Conservation Commission in the Order of Conditions (OOC)	During construction
		Employ best management practices (BMPs) to avoid, minimize and mitigate any impacts to wetland resource areas, as outlined in the Notice of Intent (NOI) which will be submitted to MassDEP and the Mt Washington Conservation Commission. Measures will include protection of resource areas, stabilization and restoration or disturbed areas, and continued post-construction monitoring both at the Project site and downstream.	Prior to, during, and following construction
Waterways & Water Quality	MassDEP, USACE	Implement appropriate BMPs, including the use of sediment and erosion controls, site stabilization measures, and appropriate handling of dredged materials, in accordance with all applicable regulations and standards (Section 401 and 404 of the Clean Waters Act, Chapter 91 Permit for Dredge and Fill, etc.)	Prior to, during, and following construction
		Perform post-construction water quality monitoring (sediment loading) downstream of the Project area	Following construction
Historic Resources	MA NHC, BUAR	No historic resources are identified within the Project vicinity. Should heretofore unknown archaeological resources be encountered during work, TNC will take steps to limit adverse effects, and notify the Board and the Massachusetts Historical Commission, as well as other appropriate agencies, immediately.	During construction
Rare Species	NHESP	TNC is in ongoing coordination with NHESP to minimize potential impacts to rare species and their habitats. All recommendations and requirements outlined by NHESP during this ongoing consultation will be implemented by TNC.	Prior to construction

Category	Agency	Mitigation Measure	Schedule
		Once construction is complete, TNC will convert the temporary access road (within NHESP Priority Habitat), into a pedestrian trail. The access road will be narrowed, and the margins planted and seeded with native plant species.	During construction
Air Quality	MassDEP	All construction and demolition activities will conform to current Air Pollution Control Regulations. TNC will implement measures to alleviate dust, noise, and odor nuisance conditions that may occur during the construction and demolition activities.	During construction
Noise & Vibrations	MassDEP	The selected alternative substantially minimizes the number of trips needed to haul sediment away, which is where most of the impact to East Street and neighbors would occur.	During construction
Hazardous Materials	MassDEP	Sediment sampling and analysis has been performed to ensure that all sediments re-used on site and released downstream are free from hazardous materials or contamination.	Prior to construction
		Any hazardous materials encountered or generated on site will be properly contained and disposed of off-site, in accordance with 310 CMR 30.00.	During construction
Transportation & Traffic	Mt Washington Board of Selectmen	The contractor hired to conduct the dam removal project will be responsible for mitigating road-related impacts (dust) during construction and repairing construction-related damage after construction, if needed. The Town and contractor will document and agree upon existing road conditions prior to beginning construction.	Prior to, during, and following construction
Climate Change, Sustainability and Resiliency	MEPA	Hydrologic modelling performed as part of the Project design found that the removal of Becker Dam will not result in negative downstream impacts. Under the current scenario, the Becker Pond Dam cannot adequately pass the 100-year, 24-hour storm event. Under the proposed Project, the restored stream will be able to handle higher flows (which may become more frequent with climate change), and the former pond will act as a flood storage area.	Prior to construction and following construction

10 RESPONSE TO COMMENTS

The Secretary's Certificate for the EENF, along with the comment letters from state agencies, municipal officials, and other interested parties, have been annotated for ease of reference and are presented in **Appendix B**: Secretary's Certificate and Comment Letters (Annotated). ***Table 10-1***, beginning on the following page, presents the comments and the Proponent's direct responses, as well as references to chapters or figures within the SEIR where additional information can be found.

Many of the comments received from state agencies and other interested parties were overwhelmingly positive, and did not require a direct response, but may provide support in addressing other comments and concerns from interested parties. As such, some of the most often cited positive responses are included within ***Table 10-1*** and are referred to within the responses to other comments and concerns.

Comments are numbered as follows, according to their source:

1. Certificate of the Secretary of Energy and Environmental Affairs
2. Department of Environmental Protection (MassDEP)
3. Board of Underwater Archaeological Resources (BUAR)
4. Division of Ecological Restoration (DER)
5. Berkshire Regional Planning Commission (BRPC)
6. Town of Mount Washington Select Board (TMW)
   American Rivers (AR) – *no comments requiring a response*.
7. Appalachian Trail Conservancy (ATC)
8. Eleanor Dawson (ED)
   Housatonic Valley Association (HVA) – *no comments requiring a response*.
9. Ted Dombrowski (TD)
   Trout Unlimited (TU) – *no comments requiring a response*.

Annotated copies of the Secretary's Certificate and all comment letters submitted are available in **Appendix B**.

Table 10-1*: Indexed Comment Responses*

Comment #	Comment (listed by reviewer)	Response
i. COMMENTS RECEIVED FROM STATE AGENCIES AND CONSERVATION TRUSTS IN SUPPORT OF THE PROPOSED PROJECT		
The Project received a number of positive responses from regulatory agencies and conservation organizations. These responses are summarized below, and referenced in response to some of the concerns expressed by other reviewers within the Comment Responses table.		
i-1: *Restoration of Ecological Connectivity / Wildlife Benefits*		The ecological benefits of the proposed dam removal project were highlighted by a number of agencies, including **MassDEP, DER, AR, ATC, HVA and TU**. Comments supporting the Project and its ecological benefits include: **MassDEP:** The dam blocks the natural movement of fish and other aquatic life and prevents the natural movement of sediment. Removal of the dam will restore the normal ecological functions of the waterway and restore water temperatures, dissolved oxygen levels and natural sediments. **DER:** DER selected the Becker Pond Dam Removal as a designated Priority Project in 2018. Since then, we have partnered with The Nature Conservancy to develop a restoration approach for this site that will restore fish passage and valuable wildlife habitat while removing a public safety hazard. The proposed actions will create a high-quality, self-sustaining riverine system that promotes resiliency within protected lands, including the Schenob Brook Area of Critical Environmental Concern. **AR**: American Rivers has worked on dam removals across Massachusetts and the country for the past two decades and time and again we see the benefits conveyed by stream restoration through dam removal. Impoundments formed by dams inundate river and stream habitat, converting it to slower moving and lake-like habitats, trapping sediment and nutrients. The water impounded behind the dam tends to be warmer, reducing dissolved oxygen and water quality. Dam removal reverses these impacts, restoring the natural sediment and nutrient transport regimes, improving water quality, and improving aquatic species passage within the river system…. Concerns regarding potential temporary impacts downstream following the dam removal are not uncommon. As noted, rivers are dynamic ecosystems. Increasingly as we study dam removals, we demonstrate that the upstream impacts recover quickly to a new habitat type; downstream impacts, for instance from sediment release, particularly on steep gradient systems such as this, also establish a new equilibrium. Some temporary impacts are not unlike what we see in rivers during and after large storm events. **ATC**: ATC is interested in this project as a conservation organization and co-managers of the adjacent public land around the Appalachian Trail near Sages Ravine, a highly popular Appalachian Trail destination with high natural resource and scenic value. We also support a restored natural stream flow into Sages Ravine. **HVA and TU**: Dam removal has many environmental benefits, including improved water quality, restoration of natural sediment and nutrient transport regimes, improvement to aquatic habitat, aquatic species passage, creation of wetlands, and increased floodplain connectivity.

Comment #	Comment (listed by reviewer)	Response
i-2: *Removal of a Safety Hazard*	A number of reviewers commented on the safety benefits of removing of the Becker Pond dam. Comments in support of these safety improvements were received from **MassDEP, DER, ATC and HVA.**	
	1. SECRETARY'S CERTIFICATE ON THE EENF: July 31, 2020	
1-1	The Single EIR should include a detailed description of the proposed project and describe any changes to the project since the filing of the EENF.	An updated Project description and description of changes made since the filing of the EENF is provided in *Section 2 (Project Summary), Section 3 (Project Alternatives*, including new alternative 5), and *Section 4 (Detailed Project Description).*
1-2	The Single EIR should include updated plans to reflect any modifications to the project design.	Updated plans are included in *Appendix C*.
1-3	The Single EIR should identify and commit to specific environmental mitigation measures and provide draft Section 61 Findings.	Mitigation measures for the Project are summarized in *Section 8* of the SEIR, and draft Section 61 Findings (with specific mitigation measures for each permit type), are summarized in *Section 9*. Additional details on specific mitigation measures and Best Management Practices (BMPs) which may be used during the dam removal can be found in *Appendix E*. Please note that these are examples of possible mitigation measures, which may vary between Projects, based on site conditions and specific requirements.
1-4	The Single EIR should include a list of required State Agency Permits, Financial Assistance, or other State approvals, as well as any local or federal permitting. It should include… applicable statutory and regulatory standards and requirements, and a description of how the project will meet those standards. It should provide a detailed description of construction procedures for all phases.	A list of required permits and approvals is provided in *Section 2.3* of the SEIR. In addition, the Draft Section 61 Findings (*Section 9*), includes applicable statutory and regulatory standards and requirements for each agency/permit, and a description of how each will be met. A detailed description of the construction procedures is provided in *Section 4.3*.
1-5	The Preferred Alternative was selected during the course of MEPA review without adequate identification of impacts or a full opportunity for public comment and input. The Single EIR should include additional description and analysis of the Preferred Alternative including a more precise delineation of impacted environmental resource areas, the potential ecological benefits of dam removal including for species habitat, any associated site plans for the Preferred Alternative and permitting requirements,	Comments received in response to the initial EENF have been addressed within this table (Comments 1 through 12), including a summary of positive responses received from various agencies, which detail some of the ecological benefits of the dam removal. In addition, a more detailed alternatives analysis has been provided in *Section 3* of the SEIR. More precise delineations of impacted resource areas have been provided in the attached plans (*Appendix C*), and a detailed discussion of the ecological benefits of dam removal is included in *Section 6.2* of the SEIR. A description of how recreational opportunities,

Comment #	Comment (listed by reviewer)	Response
	and a description of how recreational opportunities will be maintained through the Preferred Alternative.	including walking trails, will be maintained through the preferred alternative is provided in *Section 5.3*. Further opportunities for public comment and input on the proposed Project will be provided during future permit applications, including the submission of the SEIR (this MEPA document), a request for Section 401 Water Quality Certification (MassDEP), Section 404 Dredge and Fill Permit (USACE), and Notice of Intent (NOI) (Town of Mt Washington Conservation Commission and MassDEP).
1-6	According to supplemental materials provided, under the Preferred Alternative "the limits of disturbance would be substantially greater than the footprint of the excavated channel." The Single EIR should provide additional information with respect to the limits of disturbance, environmental impacts and all proposed mitigation measures.	Additional details on the limits of project disturbance have been added to the SEIR Narrative (*Section 4*), and are shown on the plans in *Appendix A*. Mitigation measures for the Project are summarized in *Section 8* of the SEIR, and draft Section 61 Findings (with specific mitigation measures for each permit type), are summarized in *Section 9*. Additional details on specific mitigation measures and Best Management Practices (BMPs) which may be used during the dam removal can be found in *Appendix E*. Please note that these are examples of possible mitigation measures, which may vary between Projects, based on site conditions and specific requirements.
1-7	Any placement of dredged sediment should be discussed with Natural Heritage and Endangered Species Program (NHESP). The Single EIR should provide updates on this discussion with NHESP, and an identification of anticipated impacts to rare species if any.	The Nature Conservancy (TNC), began consultation with NHESP regarding the proposed Project in August 2018. Initial Project designs were reviewed, and NHESP determined work on and around the dam is not anticipated to result in any negative impacts to NHESP Priority or Estimated Habitat, or to result in negative impacts to downstream Priority Natural Communities. Please see *Section 9.2.5* for further details on the ongoing consultation with NHESP, and mitigation measures proposed to date. Please note that consultation with NHESP is ongoing, and will include the future submission of a copy of the NOI for the proposed Project. All recommendations and requirements outlined by NHESP will be followed during the planning, construction, and restoration phases of the Project.
1-8	I acknowledge the comments received from several sources indicating that a fifth alternative was not included, which involves leaving the dam intact in order to preserve the current recreational uses of the dam while conducting repairs to eliminate the safety issues posed by the condition of the dam. The Single EIR should analyze this fifth alternative, in the same manner the other four alternatives were considered and include an evaluation	The SEIR includes analysis of a fifth alternative for the Project – the repair of the existing dam. Please see *Section 3.5* for a detailed analysis of this new alternative. It is noted however that this alternative does not meet the ecological restoration goals of the project, which aims to restore ecological and hydrological connectivity along the stream. The removal of Becker Pond Dam was designated as a Priority Project by DER in 2018.

Comment #	Comment (listed by reviewer)	Response
	of this fifth alternative based on consistency with project goals, feasibility, cost, and impacts to environmental resources.	
1-9	The Single EIR should evaluate how other alternatives will continue recreational opportunities, as compared to the fifth alternative described above.	Please refer to *Section 3* (Alternatives Analysis) and *Section 6.3.2* (Recreational Resources) of the SEIR, which outline recreation plans for the Project site. While some recreational aspects of Becker Pond will be lost as a result of the Project (e.g. pond fishing, pond skating etc.), alternative recreational activities will either remain un-altered by the Project, or will be provided by the Project. These include; replacement of pond fishing with coldwater stream fishing opportunities; the establishment and maintenance of new marked walking trails; the conversion of the temporary access road into a pedestrian walkway, and associated signage outlining the ecological significance of the area. Other existing recreational used of the property (including hiking, xr skiing, snowshoeing, wildlife viewing etc.), will remain un-altered by the Project.
1-10	The Single EIR should provide any additional analysis of alternatives necessary to support selection of the Preferred Alternative as the alternative that the Proponent asserts will avoid, minimize, and mitigate Damage to the Environment to the maximum extent practicable.	Additional alternatives analysis is provided in *Section 3.6* of the SEIR. The preferred alternative was selected based on meeting project goals (restoring riverine aquatic and hydrologic connectivity through the site, restoring habitat for brook trout, and eliminating the safety hazard posed by the dam), while minimizing environmental impacts from dam removal and sedimentation.
1-11	The Single EIR should include a description of how the Preferred Alternative compares relative to the dismissed alternatives and describe the differences in impacts to habitat, wetland impacts, sediment transfer within the limit of work and downstream.	Additional alternatives analysis is provided in *Section 3.6* of the SEIR. The alternatives analysis has been expanded to include a more detailed review of the differences in environmental impacts, project costs and ecological benefits, between the five proposed alternatives.
1-12	The Single EIR should include a detailed description of alternative construction methodologies that can reduce project impacts.	Construction methodologies are described in detail in *Section 4.3* of the SEIR. Construction methods have been chosen to reduce project impacts as far as possible, including methods to reduce impacts from site access (temporary access road will be reduced in width post-construction, with a narrow portion remaining in place as a walking trail, and the wider portion being restored with native plantings. TNC is working with DER and DEP to determine the best dam removal and impoundment draw-down methods to reduce impacts to reduce downstream sedimentation, and the preferred method(s) will be committed to during Project permitting.
1-13	The Single EIR should clarify the potential extent of permanent impact and temporary wetland alteration for the Preferred Alternative and include a narrative that addresses the projects	Please refer to *Section 6* (Assessment of Impacts) for details of the full extent of permanent and temporary impacts associated with the proposed Project. Please note that TNC will also be filing a Notice of Intent (NOI) with MassDEP and the Town of Mt Washington

Comment #	Comment (listed by reviewer)	Response
	consistency with the Wetland Protection Act (WPA), its implementing regulations (310 CMR 10.00) and associated performance standards; and demonstrates compliance with 401 WQC standards.	Conservation Commission, in accordance with the requirements of the WPA, and an application for 401 Water Quality Certification (MassDEP). All requirements and regulations outlined by the WPA, Clean Waters Act, and Massachusetts Surface Water Quality Standards will be met. *Section 9* of the SEIR (Draft Section 61 Findings), provides details of anticipated permit requirements and proposed mitigation.
1-14	The Proponent should review and include provisions for bank stabilization along the proposed pilot channel and adhere to the principles, methods, and techniques of the Natural Resources Conservation Service (NRCS) Stream Restoration Design Handbook, National Engineering Handbook Part 654 (Released September 20, 2007).	Please refer to *Section 9.2.6* of the SEIR for details of stream restoration design and bank stabilization. The Project has been designed to adhere to the principles and methods outlined in the Stream Restoration Design Handbook. TNC is working in coordination with the design engineer to design the pilot stream channel, and specific channel stabilization measures will be specified during the permit process.
1-15	The Single EIR should include narrative and supporting data or graphics as necessary to demonstrate that the project can meet all applicable performance standards and regulations.	Refer to *Section 2.3* (Required Permits and Other Legal Instruments), and *Section 9* (Proposed Section 61 Findings), for details of how the Project will meet applicable regulations and performance standards. All applicable requirements and standards issued during future permitting (including 401 Water Quality Certification, issuance of an Order of Conditions from the Mt Washington Conservation Commission, and any applicable NHESP requirements outlined during the consultation process), will be met.
1-16	Not all wetland resource areas delineations are apparent or easy to read on the site plans provided in the EENF.	All jurisdictional wetland resources present are depicted on Plan Sheet 11 in *Appendix C,* and consist of Bank, Land Under Water, and Bordering Land Subject to Flooding. Inter-Fluve established the limits and areas of these resources by desktop analysis for initial project planning. These resources will be flagged and located in the field as required for the WQC prior to Project permitting. There are no Bordering Vegetated Wetlands within the Project site. There is currently no Riverfront Area (RA) within the Project site, but removal of the dam will create new RA, in accordance with the regulatory definition (310 CMR 10.58(2)(a)1.).
1-17	The Nature Conservancy should continue to consider alternative construction timing or sequencing that would minimize or mitigate impacts to wetland resource areas and include any updates in the Single EIR.	Please refer to *Section 4.3* of the SEIR for a description of proposed construction techniques and project timing. TNC will also coordinate with NHESP regarding any time of year (TOY) restrictions applicable to working within Priority/Estimated Habitat Areas. Project timing and sequencing has been designed to minimize environmental impacts, including conducting dam removal activities during periods of low flow (reducing disturbance to wetlands and bank, and reducing sedimentation downstream).

Comment #	Comment (listed by reviewer)	Response
1-18	It should provide a monitoring and mitigation Plan for wetland resource areas, including BVW and LUW.	Once construction is complete, the Project area will be monitored by TNC staff and volunteers, as described in *Section 9.2.6* of the SEIR, downstream monitoring of stream flow and sediment release at Sages Ravine will be provided by the Appalachian Trail Conservancy (see *comment 7-2* in this comments table). Proposed Project mitigation measures are described throughout the SEIR, particularly in *Section 9* (Draft Section 61 findings). Please note that more detailed monitoring and mitigation plans will be developed during future permitting, including the Section 401 WQC application and NOI application.
1-19	The Single EIR should discuss potential effects of climate change, including increased frequency and intensity of precipitation events and extreme heat events, on the project design in the context of improving reliability and resiliency of the project or surrounding communities.	Please refer to *Section 5.3.7* of the SEIR for details on Climate Resiliency and the proposed Project. The proposed dam removal will create a high-quality, self-sustaining riverine system that promotes resiliency within protected lands. Dam removal will help to restore the natural temperature regime of the stream, which will likely be under increased pressure under future climate scenarios. Becker Pond dam is a run-of-river dam, and does not provide any flood storage. As such, removal of the dam will not present a significant threat of flooding, even under increased rainfall scenarios. The removal of the dam will also avoid the future risk of dam failure during storm / high rainfall events, which could pose a risk of downstream flooding or sudden sediment release.
1-20	The Single EIR should identify how the Nature Conservancy will avoid and minimize clearing of trees and other vegetation in the construction of the temporary access road.	*Section 4.3.1* describes construction of the temporary access road. TNC will minimize vegetation clearance for the road by limiting road width to the minimum required for safe construction equipment access. The new access road also follows a direct route to the dam, minimizing disturbance and the number of trees to be cleared. Post-construction, TNC will plant and/or seed the access road margins with native vegetation, reducing the temporary access road width to a pedestrian walkway. TNC is in ongoing consultation with NHESP to determine the most appropriate mitigation and restoration measures for the temporary access road, which is located in NHESP Priority Habitat.
1-21	The Single EIR should describe the techniques that will be used for revegetation of this temporary access road following construction and how this area will be utilized as a permanent hiking trail.	See *Section 2.6* (List of Proposed Mitigation Measures), and *Section 6.3.2* (Recreational Resources), for details on how the temporary access road will be stabilized and converted into a permanent walking trail.
1-22	The Single EIR should describe changes to construction methodology based on refinements of the Preferred Alternative.	Refer to *Section 4.3.1* for a detailed description of the construction methodology, and *Section* 2.2 for changes and refinements made since the submission of the EENF.

Comment #	Comment (listed by reviewer)	Response
1-23	The Single EIR should also include information about whether the hauling of construction material via East Street is anticipated to cause any damage to this Town maintained road, and if so, describe potential mitigation measures.	The off-site hauling of material is anticipated to cause wear and tear on the access road and East Street The contractor hired to conduct the dam removal project will be responsible for mitigating road-related impacts (dust) during construction and repairing construction-related damage after construction. The Town and contractor will document and agree upon existing road conditions prior to beginning construction.
1-24	The Single EIR should provide an update on construction planning, including a description of how the project will comply with MassDEP Solid Waste and Air Pollution Control regulations and the erosion and sedimentation controls that will be implemented throughout the project site to reduce potential impacts to wetland resource areas. The Single EIR should describe any other construction period BMPs that will be employed other than those already disclosed.	Please see *Section 9 (Draft Section 61 Findings)*, of the SEIR for further details on regulatory compliance and mitigation measures (including the use of sediment and erosion controls), which will be implemented throughout the Project. Details of mitigation measures can also be found within *Sections 2.6* (List of Proposed Mitigation Measures), *Section 4.3.1* (Construction Methods), and *Appendix E* (potential mitigation measures and BMPs provided by Inter-Fluve – examples from general dam removal projects).
1-25	The Single EIR should provide a separate chapter summarizing proposed mitigation measures including draft Section 61 Findings for each anticipated State Agency Action.	See *Sections 2.6* (List of Proposed Mitigation Measures), and *Section 9* (Proposed Chapter 61 Findings), of the SEIR. Please note that further mitigation details will be detailed during future permit applications, including the submission of a Section 401 request for WQC (MassDEP), and submission of a NOI (MassDEP and Mt Washington Conservation Commission).
1-26	The Single EIR should contain a copy of this Certificate and a copy of each comment letter received.	Please refer to *Appendix B* for a copy of the annotated MEPA Certificate and comments letters, with comment numbers corresponding to those listed in this table.
1-27	The Proponent should circulate the Single EIR to those parties who commented on the EENF, to any State and municipal agencies from which the Proponent will seek permits or approvals, and to any parties specified in section 11.16 of the MEPA regulations.	TNC will provide copies of this SEIR to all parties who commented on the EENF, all agencies from which permits and approvals will be sought, and all parties specified in section 11.16 of the MEPA regulations.
	MassDEP: July 20, 2020	
2-1	As proposed, this project will require a Clean Water Act Section 401 Water Quality Certification (WQC) for dredging.	TNC will be submitting an application for WQC to Mass DEP. Please refer to *Section 9* (Draft Section 61 Findings), for details of the proposed WQC Certification application and requirements.

Comment #	Comment (listed by reviewer)	Response
2-2	The Proponent should review and include provisions for bank stabilization along the proposed pilot channel and adhere to the principles, methods, and techniques of the Natural Resources Conservation Service (NRCS) Stream Restoration Design Handbook, National Engineering Handbook Part 654 (Released September 20, 2007).	Please refer to *Section 9.2.6* of the SEIR for details of stream restoration design and bank stabilization. The specific methods for bank stabilization will be submitted during the permit process, and will be designed to adhere to the principles and methods outlined in the Stream Restoration Design Handbook. BMPs will be followed to ensure the stream bank is appropriately stabilized and sedimentation is minimized as far as practicably possible.
2-3	The Proponent notes that there will be 20,100 sq. ft. of Bordering Land Subject to Flooding (BLSF) impacts, though there is evidently no FEMA-mapped floodplain in Mount Washington. This should be clarified.	While no FEMA mapped floodplain is present in Mt Washington (no data is available for the area), the estimated floodplain area was calculated by Inter-Fluve using hydrological modelling. As such, references to floodplain impacts refer to this estimated floodplain area. This has been clarified throughout the SEIR document, and in particular *Section 5.2.4*.
2-4	MassDEP notes resource areas are partially depicted (i.e., Land Under Waterbodies and Waterways), though associated survey flag locations marking the top of Bank and the extent of any Bordering Vegetated Wetlands adjacent to Becker Pond (if existing) are not readily apparent on the site plans provided. Delineation data forms for vegetated wetlands are provided in the EENF, though no vegetated wetlands are depicted on the site plans, including the known wetland near the proposed construction entrance of East Street. All resource areas must be clearly shown on site plans and resource area alterations quantified on the site plans submitted for subsequent permitting.	As described in *Section 2.1* of the revised Becker Pond Dam Removal 75% Design Report (September 2020), and *Section 5.2.4* of this SEIR, no Bordering Vegetated Wetlands (BVW) are present in the Project Area. A potential wetland area identified near the proposed construction entrance off East Street did not meet the definition of BVW, as documented in the wetland data forms submitted with the revises 75% Design Report. The area did not support 50% or more FAC or wetter vegetation, and no hydric soil indicators were present. All jurisdictional wetland resources present in the Project Area are depicted on Plan Sheet 11 in *Appendix C,* and consist of Bank, Land Under Water, and Bordering Land Subject to Flooding. Inter-Fluve established the limits and areas of these resources by desktop analysis for initial project planning. These resources will be flagged and located in the field as required for the WQC prior to Project permitting. There is currently no Riverfront Area (RA) within the Project site, but removal of the dam will create new RA, in accordance with the regulatory definition (310 CMR 10.58(2)(a)1.). BVW is present upstream and downstream of Becker Pond, but will not be impacted by Project activities.
2-5	MassDEP recommends that the project be submitted as an Ecological Restoration Project, using WPA Form 3A.	TNC anticipates submitting the proposed Project for review by MassDEP and the Mt Washington Conservation Commission as an Ecological Restoration Project. Please refer to *Section 9* of this SEIR for Draft Section 61 Findings.
2-6	The proponent should implement measures to alleviate dust, noise, and odor nuisance conditions that may occur during the construction and demolition activities.	Proposed project BMPs are provided in *Appendix E*. BMPs to alleviate dust, noise and odor nuisance conditions will be employed throughout construction.

Comment #	Comment (listed by reviewer)	Response
2-7	MassDEP recommends that the project proponent participate in the MassDEP Diesel Retrofit Program.	TNC will comply with requirements for all non-road engines to be operated using only ultra-low sulfur diesel (ULSD) with a sulfur content of 15 ppm pursuant to 40 CFR 80.510.
2-8	The proponent shall properly manage and dispose of all solid waste generated by this proposed project pursuant to 310 CMR 16.00 and 310 CMR 19.000, including the regulations at 310 CMR 19.017 (waste ban).	TNC and their contractors will comply with all applicable regulations regarding waste disposal.
2-9	Any hazardous wastes generated by the demolition and earthwork activities or universal wastes must be properly managed in accordance with 310 CMR 30.0000.	No hazardous waste is located within the Project site. Sediment analysis has been conducted and has found the sediments to be free of hazardous contaminants. No other hazardous waste is located on the site.
2-10	A spills contingency plan addressing prevention and management of potential releases of oil and/or hazardous materials from pre- and post-construction of the dam removal activities should be presented to workers at the site and enforced.	As described in *Appendix E* – Inter-fluve Best Management Practices (BMPs); *"The Contractor shall submit a Spill Prevention Plan to the Engineer for approval as part of the Construction Operations Plan prior to the preconstruction conference. The plan shall include a procedure for reporting incidents to Mass DEP*".
THE COMMONWEALTH OF MASSACHUSETTS BOARD OF UNDERWATER ARCHAEOLOGICAL RESOURCES (BAUR): July 24, 2020		
3-1 and 3-2	11. Archaeological Resources Data BUAR: The Board has conducted a preliminary review of its files, the Massachusetts Historical Commission's Massachusetts Cultural Resources Inventory System (MACRIS), historic maps, and secondary literature sources to identify known and potential submerged cultural resources in the proposed project area. No record of any underwater archaeological resources was found. Based on the results of this review and the nature of the proposed project, the Board expects that this project is unlikely to impact submerged cultural resources.	TNC thanks the BUAR for their review of the Proposed Project. Should heretofore unknown archaeological resources be encountered during the course of work, TNC will take steps to limit adverse effects (take care to not further disturb the archaeological resource and note its precise location) and notify the Board and the Massachusetts Historical Commission, as well as other appropriate agencies, immediately in accordance with the Board's Policy Guidance for the Discovery of Unanticipated Archaeological Resources.
Division of Ecological Restoration (DER): June 30, 2020		
4-1	The local, state, and federal permits required for this project will result in a thorough review by regulatory agencies and provide ample opportunity for additional public comment.	Several reviewers noted that as part of the continued permitting process, there will be ample future opportunity for further public and regulator input, including during the review period for MassDEP 401 Water Quality Certification, and during the MassDEP / Mount Washington Conservation Commission review of the Project for conformance with the

Comment #	Comment (listed by reviewer)	Response
		WPA. As some reviewers raised concerns over the opportunities for public review of the Project, TNC would like to re-iterate that there will be multiple future opportunities for public comment, in addition to that provided by the filing of this SEIR.
	Berkshire Regional Planning Commission (BRPC) July 20, 2020	
5-1	BRPC respectfully requests that the waiver from the mandatory EIR not be granted and that a Single EIR be required, at a minimum.	In response to concerns expressed in the public comments received for the EENF, TNC is submitting this single EIR (SEIR), as requested in the CERTIFICATE OF THE SECRETARY OF ENERGY AND ENVIRONMENTAL AFFAIRS ON THE EXPANDED ENVIRONMENTAL NOTIFICATION FORM on July 31, 2020. *See also: Comments 5-1 & 6-1.* TNC thanks the reviewers for all their feed-back and believes that the additional details provided in this SEIR address all outstanding concerns regarding the alternatives analysis, the assessment of the potential environmental impacts, and environmental mitigation measures for the Project. Responses to these specific concerns have been provided within this Comment Responses Table and detailed in full in the SEIR. The initial request for the waiving of the EIR requirement was Submitted in accordance with 301 CMR 11.11(1), under which the Secretary may waive an EIR if preparation of the EIR would result in "undue hardship" to the project proponent or would "not serve to avoid or minimize damage to the environment". Furthermore, when mandatory EIR review thresholds have been exceeded, the Secretary may grant a waiver of the EIR as described under 301 CMR 11.11(2) based on determination that preparation of an EIR "would not provide increased benefit to the project and the environment". Dam removal projects (such as the proposed Project), restore natural ecological function and maximize environmental benefit. In addition, the Project will require several future permit applications, including; a request for WQC from MassDEP; submission of a Notice of Intent (NOI) to MassDEP and the Mt Washington Conservation Commission, and; the submission of a Section 404 application for dredge and fill to USACE. As such, the basis of the original waiver request was that the additional requirement for an EIR would not serve to minimize damage to the environment or provide increased benefit to the project and the environment and would be a duplication of other state and local permitting requirements, which will be addressed during future permit applications.

Comment #	Comment (listed by reviewer)	Response
		Please note that the proposed Project is supported by the expert opinion of Massachusetts DER, MassDEP, American Rivers, Housatonic Valley Association, and Trout Unlimited. *Please see Comments i-1 in this table for details of agency support of the proposed Project*.
5-2	Despite the submission of supplemental material, the Expanded ENF for the Becker Pond Dam Removal does not include the level of extensive and detailed information that is warranted in order to grant a waiver of the mandatory EIR…. there are weaknesses and deficiencies that remain within the alternatives analysis, the assessment of the potential environmental impacts and environmental mitigation measures.	The new SEIR contains additional information and design considerations to address the deficiencies identified in the EENF. Specifically, please refer to *Section 3* for an expanded alternatives analysis, *Sections 2.5 and 6* for details of the proposed Project impacts, and *Sections 2.6 and 9* for a description of potential mitigation measures. Potential mitigation measures and Best Management Practices (BMPs), provided by Inter-Fluve, are also outlined in *Appendix E*. Please note that these are examples of possible mitigation measures, which may vary between Projects, based on site conditions and specific requirements. Specific mitigation measures and BMPs will be determined during future permitting, and will require approval from MassDEP, NHESP, and the Mt Washington Conservation Commission, before they are implemented.
5-3	According to supplemental materials provided by the proponent, under the preferred alternative “the limits of disturbance would be substantially greater than the footprint of the excavated channel”, however it does not appear that any additional information has been provided with respect to the limits of disturbance, environmental impacts or proposed mitigation measures.	Please see *Section 4.2* of the SEIR for details of the Project footprint and limits of disturbance, as well as the plans in *Appendix A*. *Section 6* (Assessment of Impacts), provides details of the full extent of permanent and temporary impacts associated with the Project, and *Sections 2.6 and 9* provide details of proposed mitigation.
5-4	BRPC is concerned that site access has yet to be determined and the EENF is deficient in its assessment of environmental impacts that would result from the creation of an access road… … the supplemental materials do not include additional information with respect to the wear and tear on the access road and East Street, environmental impacts or proposed mitigation measures.	Several reviewers expressed concerns over site access, both along public roads (which may experience additional wear-and-tear because of construction activities), and regarding the construction of a temporary access road within the Project site (and associated environmental impacts of this road). TNC is proposing to construct a temporary access road to perform the dam removal. The road will originate on East Street and join the existing access road on TNC property approximately 700-ft from east Street. Proposed construction and mitigation measures are described in *Section 4.3.1* and *Section 9*, respectively, and will include restoration and re-vegetation of road margins, sediment, and erosion controls to protect wetland resource areas, and ongoing coordination with NHESP to avoid impacts to rare species habitat. Please note that access road designs may be altered, based on feed-back from NHESP, MassDEP, and the Mt Washington Conservation Commission, during future permitting.

Comment #	Comment (listed by reviewer)	Response
		Future permit applications will also provide further opportunities for public comment on access road design and mitigation, including during the review of the request for 401 WQC Certification (MassDEP), and the review of the NOI (MassDEP and Mt Washington Conservation Commission). All road construction methods will be in full compliance with regulations and requirements issued by the permitting agencies. Once construction is complete, the temporary access road will be converted to a recreational pedestrian trail, as described in *Section 6.3.2* of the SEIR. Reviewers also raised concerns about the pressure that construction equipment will have on the existing gravel town roads. Please refer to *Section 6.3.3* of the SEIR for traffic analysis, emissions and noise requirements, and an evaluation of anticipated impacts to public roadways. There are no permanent impacts anticipated with this Project in relation to traffic and transit. Temporary impacts associated with construction traffic are anticipated to include the transport of heavy equipment such as backhoes and dump trucks over the access road and East Street. The off-site hauling of material is also anticipated to cause wear and tear on the access road and East Street The contractor hired to conduct the dam removal project will be responsible for mitigating road-related impacts (dust) during construction and repairing construction-related damage after construction. The Town and contractor will document and agree upon existing road conditions prior to beginning construction.
5-5	Lastly, a fifth alternative has not been included, which is leaving the dam intact and repairing the dam to eliminate the safety issues currently posed by the condition of the dam.	Please refer to *Section 3.5* of the SEIR for details of a fifth alternative - leaving the dam intact and repairing the dam to eliminate the safety issues. While this alternative would address the current safety issues posed by the dam, it would not address the primary goal of the project, which is to restore aquatic and hydrologic connectivity through the site. At present, the Becker Pond Dam blocks the movement of fish and other aquatic life and prevents the natural movement of sediment. Removal of the dam will restore the normal ecological functions of the waterway and restore water temperatures, dissolved oxygen levels, and natural sediments. Removal of the dam will also restore the natural and historical ecological function of the brook, which is a Mass Wildlife-certified Coldwater Fishery Resource and falls within the Schenob Brook Area of Critical Environmental Concern. As such, DER selected the Becker Pond Dam Removal as a designated Priority Project in 2018. The removal of the dam is strongly supported by MassDEP, DER, AR, ATC, HVA and TU.
Town of Mount Washington Select Board (TMW) June 29, 2020		

<table>
<tr><th>Comment #</th><th>Comment (listed by reviewer)</th><th>Response</th></tr>
<tr><td>6-1</td><td>the Select Board of the Town of Mount Washington opposes the requested waiver of the Mandatory Environmental Impact Report for the Becker Pond Dam Removal Project…
…The Town strongly supports a full environmental study performed on the entire area, including upstream wetlands, the Becker Pond impoundment area and its adjacent wetlands, and the downstream waterways into Sages Ravine and further into Connecticut, as well as their embankment areas.</td><td>In response to a number of requests for the submission of an EIR, TNC is submitting this SEIR, as required by the Massachusetts Secretary of Energy and Environmental Affairs.
Please refer to <i>Section 5</i> of this SEIR for details of environmental resources located within the Project area, as well as upstream and downstream resource areas. Please also note that this SEIR represents the first of several permit applications which will be required for the Project. In particular, TNC will be submitting a Notice of Intent (NOI) to MassDEP and the Town of Mount Washington Conservation Commission, in order to comply with the regulations and requirements of the Massachusetts Wetland Protection Act (WPA) 310 CMR 10.00. As part of the NOI filing, a complete desktop assessment and field delineation of all wetland resource areas within the Project area will be provided. Findings will be submitted to the Conservation Commission in writing, at least 14 days prior to a scheduled public hearing for the Project. Abutters to the property will be notified in writing at least 5 days prior to the hearing, and an advertisement will be placed in the local paper at the same time, advertising the time and location of the hearing.
TNC will conduct ongoing monitoring of site restoration and stabilization, which will continue until at least 70% of the disturbed areas have been revegetated with native plants (as required for compliance with the WPA). In addition, ATC are proposing to perform ongoing monitoring of sediment release downstream to the Sages Ravine (see Comment 8-4 in this table), and will coordinate with TNC to devise a monitoring plan that will be submitted during the permit process</td></tr>
<tr><td>6-2</td><td>It is our understanding that in order to perform the work the proponent will have to install and then remove a new access way. This too causes environmental concern.</td><td>See response to Comment 5-4.</td></tr>
<tr><td colspan="3">American Rivers (AR)
July 24, 2020</td></tr>
<tr><td colspan="3">TNC thanks American Rivers for their support of the Project. Statements made by American Rivers, describing the ecological benefits of the proposed dam removal, have been included in <i>comment i-1</i> at the start of this table. TNC hopes that the overwhelming support for the proposed project expressed in <i>comment i-1</i> by MassDEP, DER, American Rivers, the Appalachian Trail Conservancy, the Housatonic Valley Association and Trout Unlimited will help address some of the concerns raised by other reviewers within this comment response table. No specific comments requiring response were submitted by American Rivers.</td></tr>
<tr><td colspan="3">Appalachian Trail Conservancy (ATC)
July 23, 2020</td></tr>
</table>

Comment #	**Comment (listed by reviewer)**	**Response**
7-1	We request that ATC be notified of when the dam removal will occur so that we can inform Appalachian Trail visitors to the Sages Ravine area of this project.	The ATC will be notified prior to any dam removal or related construction activities. Notifications will also be sent to all abutters prior to the Mount Washington Conservation Commission public meeting, so that interested parties will have further opportunities for comments and questions on the Project.
7-2	We would also like to offer monitoring of stream flow and sediment release at Sages Ravine and look forward to working with TNC on a monitoring program.	TNC is grateful for the offer of downstream monitoring and will be in touch with ATC to discuss possible collaboration on future monitoring efforts.
	Eleanor Dawson (ED) **July 1, 2020**	
8-1	I strongly support the Selectboard's unanimous vote to oppose a waiver for the Environmental Impact Review for the Becker Pond project.	In response to concerns raised by several reviewers, and in conformance with the request made by the Secretary of Energy and Environmental Affairs, TNC is submitting this SEIR. Please refer to the response to *Comment 5-1*, regarding the justification for the initial waiver request.
8-2	I have attached a copy of the Nature Conservancy's own mission statement and I would encourage you to read it in its entirety.	TNC strongly believes that the proposed Project fits with the agencies mission to "*conserve the lands and waters on which all life depends*". The proposed Project will restore an important coldwater fishery, re-connect upstream and downstream aquatic habitats for wildlife, and restore natural stream hydrology and sediment transportation. TNC recognizes that several reviewers have expressed concern over the ecological benefits and purpose of the Project, and would like to re-iterate that the removal of the Becker Pond Dam is strongly supported by MassDEP, DER, AR, ATC, HVA and TU. Comments from these expert reviewers (in support of the Project), have been included at the start of this Comment Response Table for reference, and TNC would encourage concerned reviewers to consider these agency responses in addition to the information provided by TNC.
8-3	I would also encourage you to become familiar with some of the TNC projects around the country that have changed wild areas into commercially viable properties.	This comment is not relevant to the proposed Project. TNC has no plans to change the land use of the project area, nor make it into a "commercially viable property" as described by the reviewer. The property will continue to be available for public access and recreation, and the only alteration in land use (other than the dam removal), will be the conversion of the temporary access road into a recreational trail.

Comment #	Comment (listed by reviewer)	Response
8-4	In our own town we were lead to believe that in order to eradicate the evil barberry … that the appropriate strategy was to use literally tons of Roundup to control the situation.	Invasive species could be introduced / spread within the Project site due to construction activities and the movement of people and equipment. TNC will monitor the Project site for invasive plants and control these species as needed to prevent them from establishing permanent populations. TNC has been controlling invasive plants in the southern Berkshires for over 15 years, with documented success at both controlling invasive plants and minimizing non-target impacts. Monitoring treatment success is tracked using vegetation monitoring plots, photo monitoring, and pre and post treatment site inspections and evaluations. All herbicide applications are performed by TNC staff, volunteers, or contractors who hold valid pesticide application licenses issued by the Commonwealth of Massachusetts. The Nature Conservancy Approaches to Invasive Plant Species Management in Wetland Resource Areas is provided in *Appendix E.*
8-5	Within this application is the fact that, to perform the proposed project, an access road will have to be built. There are no details regarding the scale, size or impact of this road or its remediation when the project is completed. This activity will require large equipment to be transported over a gravel road that belongs to the town with absolutely no consideration or reimbursement for the wear-and-tear on any of the town-owned roads. The population living along that part of the road will be subject to the noise, dust and inconvenience caused by the work being done. Anyone else owning property up here who would want to "remediate" an area under similar conditions would be paying a huge fee to complete the EIR required.	See response to *comment 5-4*, regarding access and construction related impacts. Additional details on access road construction (*Section 4.3*), impacts (*Section 6.3.3*), and remediation (*Section 6.3.2*), including post-construction conversion of the access road into a pedestrian walking trail, are provided in the SEIR. Potential impacts to existing town roads are addressed in *Section 4.3.1* of the SEIR. The contractor will be responsible for repairing any damage to Town roads, including the filling of ruts or potholes.
8-6	The population living along that part of the road will be subject to the noise, dust and inconvenience caused by the work being done.	Please refer to *Section 6.1* of the SEIR for details on the impact assessment for access and construction activities, and *Sections 8 and 9* for details of mitigation (including control of construction site dust, noise and odor). In accordance with MassDEP regulations 310 CMR 7.00 and 310 CMR 10.00, TNC will implement measures to alleviate dust, noise, and odor nuisance conditions that may occur during the construction and demolition activities.
8-7	Clearly there have been strong concerns voiced regarding the value of the entire project. Impoundments changed the environment dramatically. But recognizing that those concerns need to be addressed by the Nature Conservancy, not swept aside.	Two of the twelve reviewers expressed concerns regarding the ecological value of the Project. TNC would like to direct concerned reviewers to comments received from **MassDEP, DER, AR, ATC, HVA and TU**, outlined at the start of this table in *comment i-1*, which demonstrate the overwhelming support for the proposed project from state agencies and conservation trusts.

<table>
<tr><th>Comment #</th><th>Comment (listed by reviewer)</th><th>Response</th></tr>
<tr><td></td><td>Waiving requirements for the EIR will send exactly the wrong message.</td><td>Dam removal projects are important for restoring natural ecological stream function, with environmental benefits including improved water quality, restoration of natural sediment and nutrient transport regimes, improvement to aquatic habitat, aquatic species passage, creation of wetlands, and increased floodplain connectivity. The removal of the dam at Becker Pond was designated as a Priority Project by DER in 2018.</td></tr>
<tr><td colspan="3">Housatonic Valley Association (HVA)
July 24, 2020</td></tr>
<tr><td colspan="3">TNC thanks the Housatonic Valley Association (HVA) for their support of the Project. Statements made by HVA, describing the ecological benefits of the proposed dam removal, have been included in <i>comment i-1</i> at the start of this table. TNC hopes that the overwhelming support for the proposed project expressed in <i>comment i-1</i> by MassDEP, DER, AR, ATC, HVA and TU will help address some of the concerns raised by other reviewers within this comment response table. No specific comments requiring response were submitted by HVA.</td></tr>
<tr><td colspan="3">Ted Dombrowski (TD)
July 1, 2020</td></tr>
<tr><td>9-1</td><td>Becker Pond is a thriving Ecosystem that should not be eliminated, especially by the Nature Conservancy. The pond is spring fed and has many pools upstream harboring endangered species of amphibians and plant life. The pond itself is a breeding ground for native brook trout, newt salamanders which breed on the dam itself yearly. Also spotted salamanders, wood ducks, kingfishers, blue herons, variety of owls.</td><td>Two of the twelve reviewers expressed concerns regarding the ecological value of the Project. TNC would like to direct concerned reviewers to comments received from MassDEP, DER, AR, ATC, HVA and TU, outlined at the start of this table in <i>comment i-1</i>, which demonstrate the overwhelming support for the proposed project from state agencies and conservation trusts. The Project will not impact any rare or endangered species, and TNC is in on-going consultation with NHESP as part of the Project design and permitting proccess, to ensure that impacts within Priority Habitat are minimized or avoided.

Dam removal projects are important for restoring natural ecological stream function, with environmental benefits including improved water quality, restoration of natural sediment and nutrient transport regimes, improvement to aquatic habitat, aquatic species passage, creation of wetlands, and increased floodplain connectivity. The removal of the dam at Becker Pond was designated as a Priority Project by DER in 2018. While the existing man-made pond no doubt provides wildlife habitat, the restoration of the stream to its natural state will provide improved habitat for many of the species listed by the reviewers. Removal of the stream obstruction presented by the Becker Pond Dam is in line with the Massachusetts Stream Crossing Standards and will improve both hydrological and ecological stream connectivity.

Removal of the dam will not impact upstream habitat (including the breeding pools of stream dependent species) and will open up new habitat areas which were previously</td></tr>
</table>

Comment #	Comment (listed by reviewer)	Response
		inaccessible to aquatic organisms (due to the obstruction posed by the dam). Although the impoundment will be lost, the species listed by the Commenter use streams, and will have suitable habitat within the restored brook after the Becker Pond Dam is removed.
9-2	The pond is located a good half of a mile off east street and was owned by the Dombrowski family for three generations. It was recently sold to the Nature Conservancy thinking it would be kept intact.	The purchase and sale agreement for the property did not stipulate maintaining the dam. While TNC recognizes the aesthetic and cultural value of Becker Pond, dam removal is key to restoring the natural and historical ecological function of the associated brook, which is a Mass Wildlife-certified Coldwater Fishery Resource and falls within the Schenob Brook Area of Critical Environmental Concern. As such, DER selected the Becker Pond Dam Removal as a designated Priority Project in 2018. Removing of the dam and restoring the natural ecological and hydrological connectivity of the associated brook supports TNC's mission to "*conserve the lands and waters on which all life depends".* While this will result in loss of the existing pond, the restored brook will have exceptional conservation and recreational value, restoring a coldwater fisheries resource, and providing new spawning habitat for fish (including brook trout).
9-3	Last year their intent removing the dam was given and they were told they could not use the road for the removal of the dam. It now looks like they are intending on building a alternative road through Nature Conservancy property south of the existing road.	TNC is proposing to construct a temporary access road in order to perform the dam removal. Once dam removal activities are complete, the temporary access road will be narrowed (with native plantings and seeding), and the central portion of the road will remain in place as a pedestrian trail. Please refer to *Section 6.3.2* of the SEIR for further details of the proposed trail.
Trout Unlimited (TU) **June 24, 2020**		
TNC thanks Trout Unlimited (TU) for their support of the Project. Statements made by TU, describing the ecological benefits of the proposed dam removal, have been included in *comment i-1* at the start of this table. TNC hopes that the overwhelming support for the proposed project expressed in *comment i-1* by **MassDEP, DER, AR, ATC, HVA and TU** will help address some of the concerns raised by other reviewers within this comment response table. No specific comments requiring response were submitted by TU.		

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12 APPENDICES

Appendix A – MEPA History - Previously Issued MEPA Documents

Appendix B – Annotated MEPA Certificate and Comments

Appendix C – Maps, Plan Sets, and Photos

Appendix D – Inter-Fluve 75% Design Report

Appendix E – Best Management Practices (BMPs)

Appendix F – Correspondence with NHESP

Attachment A

Becker Pond Dam Removal Project
Mt Washington, MA
SEIR - EEA File #16226

MEPA HISTORY: PREVIOUS MEPA SUBMISSIONS

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: **Becker Pond Dam Removal**

Street Address: **East Street**

Municipality: **Mt. Washington**	Watershed: **Housatonic River**
Universal Transverse Mercator Coordinates:	Latitude: **42° 33' 30.05"** Longitude: **73° 27' 33.29"**
Estimated commencement date: **July 2021**	Estimated completion date: **September 2021**
Project Type: **Dam Removal/River Restoration**	Status of project design: **75**% complete

Proponent: **The Nature Conservancy**

Street Address: **136 West St., Suite 202**

Municipality: **Northampton**	State: **MA**	Zip Code: **01060**

Name of Contact Person: **Candice Constantine**

Firm/Agency: **Inter-Fluve, Inc.**	Street Address: **63 Spring Street, 2nd Floor, Suite J**

Municipality: **Williamstown**	State: **MA**	Zip Code: **01267**
Phone: **617.909.7569**	Fax: **608.441.0218**	E-mail: **cconstantine@interfluve.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)?
Wetlands, Waterways, and Tidelands (301 CMR 11.03(3))
State-Listed Rare Species (301 CMR 11.03(2))
Which State Agency Permits will the project require?
MA Wetlands Protection Act Notice of Intent
WW26 combined Ch91 dredge permit/401 Water Quality Certification

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:
MA Division of Ecological Restoration: ~$58,000

Summary of Project Size & Environmental Impacts	**Existing**	**Change**	**Total**
LAND			
Total site acreage	0.98 ac		
New acres of land altered		0.98	
Acres of impervious area	N/A	N/A	N/A
Square feet of new bordering vegetated wetlands alteration		N/A	
Square feet of new other wetland alteration		-34,600 (Land Underwater)	
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 project area consists of Becker Pond Dam and the area immediately upstream of the dam. Becker Pond Dam is located on an unnamed brook in a relatively remote area near the Mt. Washington State Forest. The dam and the surrounding property are part of the 800-acre Mt. Plantain Preserve, owned by The Nature Conservancy (TNC). The TNC property is used by the public for hunting, fishing, and other recreation. Downstream of the dam, the unnamed brook joins Schenob Brook downstream of Sages Ravine. The next bridge over the brook is approximately two miles downstream from the dam.

Becker Pond Dam is a run-of-the-river dam currently in poor condition with several critical safety and structural issues. Becker Pond covers an area of approximately 0.65 acres and is not under jurisdiction of the MA Office of Dam Safety. Becker Pond Dam is composed of a 95-foot long earthen embankment and concrete core wall. The dam outlet consists of a rectangular weir spillway with concrete apron and concrete training walls. The structural height of the dam is 14.3 ft. The crest of the concrete spillway is set approximately 2.3 feet below the top of the concrete core wall and has a weir length of 23.2 feet. The concrete training walls retain the earthen embankments adjacent to the spillway section and direct flow over the concrete apron. The concrete apron extends approximately 16.8 feet downstream of the base of the spillway. A low-level outlet is present and believed by project partners to be inoperable.

A visual inspection carried out in 2016 by Fuss & O'Neill found the dam to be in poor condition with several critical issues, notably on the left training wall which is cracking and failing and has slipped off the foundation. The inspection also found significant erosion of the earthen embankment adjacent to the wall and cracked and spalling concrete. The wooden bridge crossing the dam is partially collapsed and has been cordoned off by TNC with warning signs posted.

Downstream of Becker Pond Dam, the brook flows over steep terrain within a narrow hemlock and birch dominated forested valley. The channel is approximately 12 to 15 feet wide with a 1 to 1.5 foot bankfull depth. Frequent, but irregularly spaced, constrictions created by bedrock narrow the channel to approximately 8 feet in some locations. Exposed bedrock, fallen logs, and boulders create steps with 1 to 3 feet of vertical drop with plunge pools located downstream. Investigations found that substrate material is primarily sand and gravel, with 2 to 3-inch particles frequently mobilized.

The upstream limit of the impoundment is approximately 50 feet downstream of a wooden footbridge that crosses the stream. Upstream of this bridge the channel is steep with boulders and cobbles. Further upstream, the channel is a low gradient wetland channel with an extensive deciduous wooded swamp influenced by beaver activity.

Describe the proposed project and its programmatic and physical elements:

The primary goals of the proposed project are to 1) eliminate the safety hazard posed by the dam; and 2) restore aquatic and hydrologic connectivity through the site. TNC is seeking a simple, low-impact solution that will restore habitat for wild brook trout and other native aquatic species.

The design of the dam removal includes removing the full vertical and lateral extents of the

concrete associated with the dam, and re-grading the surrounding embankments to balance the impact to surrounding areas. This minimal effort approach is consistent with the project goals.

The proposed embankment re-grading reflects an intent to tie into the contours of the existing valley slopes and stream channel upstream and downstream of the dam. It is likely that the embankment is constructed of unconsolidated fill placed on boulders and bedrock. If stable consolidated material is not encountered, materials will be excavated to achieve approximately 2:1 slopes.

All excavated slopes that result in bare soil are to receive a slope treatment of native slope/upland seed mix with biodegradable surface fabric on top, staked in place to retain soil on the slope until the vegetation has been established. In addition, native shrub and tree plantings are shown within the limits of fill operations.

Investigations of the watershed and impoundment were carried out to understand the changes that will occur to the area following dam removal. The Becker Pond Dam watershed remains undeveloped, consistent with the conditions that existed when the dam was built. Depth of refusal surveys of the impoundment found that the substrate underlying the impounded sediment is primarily cobbles, boulder, and bedrock consistent with bed and bank materials visible upstream and downstream of the impoundment.

Sediment management following dam removal includes passive downstream release. The relatively small amount of sediment impounded by the dam constitutes approximately 70% of the estimated annual suspended sediment load of the brook and 5% of the estimated suspended sediment load of Schenob Brook. Due to the coarse substrate underlying the fine-grained impounded sediment, headcutting is not expected to be a major risk to channel and adjacent hillslope stability. A due diligence review found no potential sources of contamination within the watershed.

It is expected that a portion of the impounded sediment will be evacuated over time as the channel undergoes natural evolution processes following dam removal. Channel stabilization measures will not be necessary to protect against extraordinary erosion or to protect infrastructure (there is none). Impoundment sediment will be dispersed by the brook downstream of the dam because flow competence and transport capacity are generally high relative to the size and volume of the impounded sediment. Given the sandy nature of the material and the characteristics of the channel and valley, the material will likely be transmitted intermittently, with temporary storage in pools, upstream of log jams, on bars, and other low velocity areas. Thus, the primary impacts of sediment release are likely to include temporary burial of habitat features and/or organisms that cannot quickly mobilize and adapt to changing conditions. Most deposition is likely to be temporary; however, permanent deposition of mobilized sediment may occur in secondary channels and low-lying floodplain areas where the valley widens locally. As seen on similar Massachusetts dam removal projects, these effects will decrease with time and with distance downstream as the inputs of sediment are attenuated through erosion and deposition.

As shown in the design drawings, the proposed access to the dam will be a combination of a new access road and an existing dirt road. The new access road will come off of East Street and will be created in an eastward direction, staying entirely within TNC property until it meets the existing dirt road. The existing dirt road continues in a southerly direction to the dam. Existing cleared areas adjacent to the dam will provide staging space for construction vehicles. Another option for access that is being investigated by TNC is to use the entirety of the existing dirt road that extends from East Street to the dam. This option would eliminate the need to remove vegetation and re-grade a new access road connecting East

Street to the existing dirt road. However, approximately 600 feet of this existing road starting from East Street is on private property. TNC is actively looking into options to be able to use this existing access route.

NOTE: The project description should summarize both the project's direct and indirect impacts (including construction period impacts) in terms of their magnitude, geographic extent, duration and frequency, and reversibility, as applicable. It should also discuss the infrastructure requirements of the project and the capacity of the municipal and/or regional infrastructure to sustain these requirements into the future.

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:

The proposed project design shown in the plan set is the best option to meet the project goals of public safety and restored aquatic connectivity. The benefits and drawbacks of no action, passive sediment release, and active sediment management/channel stabilization are discussed below.

1. **No Action**

No action at Becker Pond will maintain the existing condition of the dam and impoundment, as well as the river upstream and downstream of the dam. The dam will continue to pose a public safety risk and liability, and hydrologic and aquatic habitat continuity will continue to be impacted. Structural repairs would be recommended if a no action alternative is pursued.

2. **Dam Removal and Passive Sediment Release (preferred alternative)**

The dam removal and passive sediment release alternative is described in detail in other sections. Dam removal will result in the removal of a hydrologic barrier and reduce an existing public safety risk. Passive sediment release is a low-impact option which allows channel evolution processes to occur without major channel stabilization effort. Because impounded sediment volume is small, minor deposition in downstream areas is expected. Additionally, risk of headcut development or excessive erosion within the impounded area is expected to be low.

3. **Dam Removal and Active Sediment Management**

Dam removal and active sediment management within the impoundment is not a preferred alternative due to a lack of demonstrated need of this more intensive level of construction. Under this alternative, dam removal would be a carried out as described above. Active removal of sediment would include dewatering the impoundment and bypassing the active flows of stream while the impounded sediment was removed by excavator. The sediment would be trucked to an approved off-site facility. Active removal and disposal of impounded sediments was found to not be necessary due to the small volume of sediment and the lack of contamination within the sediment. State funding and staff resources are limited for restoration projects within the Commonwealth and the additional resources necessary to proceed with active sediment removal on this site could be better used initiating new restoration projects that would improve stream and wetland ecosystems elsewhere in the Commonwealth.

NOTE*: The purpose of the alternatives analysis is to consider what effect changing the parameters and/or siting of a project, or components thereof, will have on the environment, keeping in mind that the objective of the MEPA review process is to avoid or minimize damage to the environment to the greatest extent feasible. Examples of alternative projects include alternative site locations, alternative site uses, and alternative site configurations.*

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

The project is a proactive aquatic habitat restoration project with long-term benefits to public safety. No mitigation is proposed.

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

N/A

AREAS OF CRITICAL ENVIRONMENTAL CONCERN:
Is the project within or adjacent to an Area of Critical Environmental Concern?
☒Yes (Specify__**Schenob Brook Drainage Basin**)
☐No
if yes, does the ACEC have an approved Resource Management Plan? ___ Yes **X** No;
If yes, describe how the project complies with this plan.
____
Will there be stormwater runoff or discharge to the designated ACEC? __Yes _**X**__ No;
If yes, describe and assess the potential impacts of such stormwater runoff/discharge to the designated ACEC.

The project lies within the Schenob Brook Drainage Basin ACEC. Sediment and erosion control best management practices will be in place during construction to minimize the discharge of sediment from the staging and access areas.

RARE SPECIES:
Does the project site include Estimated and/or Priority Habitat of State-Listed Rare Species? (see http://www.mass.gov/dfwele/dfw/nhesp/regulatory_review/priority_habitat/priority_habitat_home.htm)
☒Yes (Specify_**The project is located within PH 1017**_____) ☐No

HISTORICAL /ARCHAEOLOGICAL RESOURCES:
Does the project site include any structure, site or district listed in the State Register of Historic Place or the inventory of Historic and Archaeological Assets of the Commonwealth?
☐Yes (Specify___________________________________) ☒No
If yes, does the project involve any demolition or destruction of any listed or inventoried historic or archaeological resources? ☐Yes (Specify___________________________________) ☐No

WATER RESOURCES:
Is there an Outstanding Resource Water (ORW) on or within a half-mile radius of the project site? ___Yes **X** No;
if yes, identify the ORW and its location. ____

(NOTE: Outstanding Resource Waters include Class A public water supplies, their tributaries, and bordering wetlands; active and inactive reservoirs approved by MassDEP; certain waters within Areas of Critical Environmental Concern, and certified vernal pools. Outstanding resource waters are listed in the Surface Water Quality Standards, 314 CMR 4.00.)

Are there any impaired water bodies on or within a half-mile radius of the project site? ___Yes _**X**_No; if yes, identify the water body and pollutant(s) causing the impairment:____________________________________.

Is the project within a medium or high stress basin, as established by the Massachusetts Water Resources Commission? ___Yes **X** No

STORMWATER MANAGEMENT:

Generally, describe the project's stormwater impacts and measures that the project will take to comply with the standards found in MassDEP's Stormwater Management Regulations:

Stormwater will not be directly impacted by the project since impervious areas will not be constructed. Construction will adhere to Massachusetts Stormwater Policy Standard #8 for reducing erosion, sedimentation, and other pollutant impacts.

MASSACHUSETTS CONTINGENCY PLAN:

Has the project site been, or is it currently being, regulated under M.G.L.c.21E or the Massachusetts Contingency Plan? Yes ___ No **X** ; if yes, please describe the current status of the site (including Release Tracking Number (RTN), cleanup phase, and Response Action Outcome classification):___________

Is there an Activity and Use Limitation (AUL) on any portion of the project site? Yes ___ No **X**; if yes, describe which portion of the site and how the project will be consistent with the AUL: ______________

Are you aware of any Reportable Conditions at the property that have not yet been assigned an RTN? Yes ___ No **X** ; if yes, please describe:___________________________________

SOLID AND HAZARDOUS WASTE:

If the project will generate solid waste during demolition or construction, describe alternatives considered for re-use, recycling, and disposal of, e.g., asphalt, brick, concrete, gypsum, metal, wood:______________________

Concrete from the dam will be removed and delivered to an appropriate rubble crushing operation nearby that will recycle the concrete.

(NOTE: Asphalt pavement, brick, concrete and metal are banned from disposal at Massachusetts landfills and waste combustion facilities and wood is banned from disposal at Massachusetts landfills. See 310 CMR 19.017 for the complete list of banned materials.)

Will your project disturb asbestos containing materials? Yes ___ No **X**; if yes, please consult state asbestos requirements at http://mass.gov/MassDEP/air/asbhom01.htm

Describe anti-idling and other measures to limit emissions from construction equipment:

All construction equipment will be turned off when not being used during work hours and will be turned off at the end of each work day.

DESIGNATED WILD AND SCENIC RIVER:

Is this project site located wholly or partially within a defined river corridor of a federally designated Wild and Scenic River or a state designated Scenic River? Yes ___ No **X** ; if yes, specify name of river and designation:

If yes, does the project have the potential to impact any of the “outstandingly remarkable” resources of a federally Wild and Scenic River or the stated purpose of a state designated Scenic River? Yes ___ No ___ ; if yes, specify name of river and designation: ____________;
if yes, will the project will result in any impacts to any of the designated “outstandingly remarkable” resources of the Wild and Scenic River or the stated purposes of a Scenic River.
Yes ___ No ___ ;
if yes,describe the potential impacts to one or more of the “outstandingly remarkable” resources or stated purposes and mitigation measures proposed.

ATTACHMENTS:

1. List of all attachments to this document.
2. U.S.G.S. map.
3. Photos of the project site
4. Basis of design memo, including hydrology and hydraulics analysis, climate change impacts discussion, and sediment management plan
5. Rationale for sediment management approach by MA DER
6. Communication with NHESP regarding rare species
7. Map showing proximity of project to resource areas
8. Design drawings for the removal of Becker Pond Dam
9. List of all agencies and persons to whom the proponent circulated the EENF, in accordance with 301 CMR 11.16(2).
10. List of municipal and federal permits and reviews required by the project, as applicable.

LAND SECTION – all proponents must fill out this section

I. Thresholds / Permits

A. Does the project meet or exceed any review thresholds related to **land** (see 301 CMR 11.03(1)
___ Yes **X** No; if yes, specify each threshold:

II. Impacts and Permits

A. Describe, in acres, the current and proposed character of the project site, as follows:

	Existing	Change	Total
Footprint of buildings	__N/A___	__N/A___	__N/A__
Internal roadways	___N/A__	__N/A___	__N/A__
Parking and other paved areas	___N/A__	__N/A___	__N/A__
Other altered areas	___N/A__	__N/A___	___N/A_
Undeveloped areas	__0.98__	____0___	__0.98_
Total: Project Site Acreage	__0.98__	____0___	__0.98_

B. Has any part of the project site been in active agricultural use in the last five years?
___ Yes **X** No; if yes, how many acres of land in agricultural use (with prime state or locally important agricultural soils) will be converted to nonagricultural use?

C. Is any part of the project site currently or proposed to be in active forestry use?
___ Yes **X** No; if yes, please describe current and proposed forestry activities and indicate whether any part of the site is the subject of a forest management plan approved by the Department of Conservation and Recreation:

D. Does any part of the project involve conversion of land held for natural resources purposes in accordance with Article 97 of the Amendments to the Constitution of the Commonwealth to any purpose not in accordance with Article 97? ___ Yes **X** No; if yes, describe:

E. Is any part of the project site currently subject to a conservation restriction, preservation restriction, agricultural preservation restriction or watershed preservation restriction?
Yes **X** No; if yes, does the project involve the release or modification of such restriction?
___ Yes No; if yes, describe:

F. Does the project require approval of a new urban redevelopment project or a fundamental change in an existing urban redevelopment project under M.G.L.c.121A? ___ Yes **X** No; if yes, describe:

G. Does the project require approval of a new urban renewal plan or a major modification of an existing urban renewal plan under M.G.L.c.121B? Yes ___ No **X** ; if yes, describe:

III. Consistency

A. Identify the current municipal comprehensive land use plan
Title:_Mt. Washington Comprehensive Plan___ Date__April 2007_______

B. Describe the project's consistency with that plan with regard to:
1) economic development _**NA**____________________
2) adequacy of infrastructure _**Removing a structure that is falling apart**_
3) open space impacts _**improving natural resources**______________
4) compatibility with adjacent land uses_**No change**____

C. Identify the current Regional Policy Plan of the applicable Regional Planning Agency (RPA)
RPA: Berkshire Regional Planning Commission

Title:__The Regional Plan for the Berkshires___ Date__May 2000____

D. Describe the project's consistency with that plan with regard to:
1) economic development __**NA**__________________
2) adequacy of infrastructure __ **Removing a structure that is falling apart** _____
3) open space impacts __ **improving natural resources** ________

RARE SPECIES SECTION

I. Thresholds / Permits

A. Will the project meet or exceed any review thresholds related to **rare species or habitat** (see 301 CMR 11.03(2))? **X** Yes No; if yes, specify, in quantitative terms:

(NOTE: If you are uncertain, it is recommended that you consult with the Natural Heritage and Endangered Species Program (NHESP) prior to submitting the ENF.)

B. Does the project require any state permits related to **rare species or habitat**? ___ Yes **X** No

C. Does the project site fall within mapped rare species habitat (Priority or Estimated Habitat?) in the current Massachusetts Natural Heritage Atlas (attach relevant page)? **X** Yes ___ No.

D. If you answered "No" to <u>all</u> questions A, B and C, proceed to the **Wetlands, Waterways, and Tidelands Section**. If you answered "Yes" to <u>either</u> question A or question B, fill out the remainder of the Rare Species section below.

II. Impacts and Permits

A. Does the project site fall within Priority or Estimated Habitat in the current Massachusetts Natural Heritage Atlas (attach relevant page)? **X** Yes ___ No. If yes,

1. Have you consulted with the Division of Fisheries and Wildlife Natural Heritage and Endangered Species Program (NHESP)? **X** Yes ___No; if yes, have you received a determination as to whether the project will result in the "take" of a rare species? ___ Yes **X** No; if yes, attach the letter of determination to this submission.

2. Will the project "take" an endangered, threatened, and/or species of special concern in accordance with M.G.L. c.131A (see also 321 CMR 10.04)? ___ Yes **X** No; if yes, provide a summary of proposed measures to minimize and mitigate rare species impacts

3. Which rare species are known to occur within the Priority or Estimated Habitat? **This information can be provided to MEPA reviewers but will not be made public.**

4. Has the site been surveyed for rare species in accordance with the Massachusetts Endangered Species Act? ___ Yes **X** No

4. If your project is within Estimated Habitat, have you filed a Notice of Intent or received an Order of Conditions for this project? ___ Yes **X** No; if yes, did you send a copy of the Notice of Intent to the Natural Heritage and Endangered Species Program, in accordance with the Wetlands Protection Act regulations? ___ Yes ___ No

B. Will the project "take" an endangered, threatened, and/or species of special concern in accordance with M.G.L. c.131A (see also 321 CMR 10.04)? ___ Yes **X** No; if yes, provide a summary of proposed measures to minimize and mitigate impacts to significant habitat:

WETLANDS, WATERWAYS, AND TIDELANDS SECTION

I. Thresholds / Permits

A. Will the project meet or exceed any review thresholds related to **wetlands, waterways, and tidelands** (see 301 CMR 11.03(3))? **X** Yes ___ No; if yes, specify, in quantitative terms:

The removal of Becker Pond Dam will lower water elevations within the former impoundment. The impoundment is in the form of a linear stream and this stream alignment will not be altered, there will be little change in resource areas. The area of Land Under Water to be converted to Bordering Vegetated Wetland is approximately 34,600 square feet.

B. Does the project require any state permits (or a local Order of Conditions) related to **wetlands, waterways, or tidelands**? **X** Yes ___ No; if yes, specify which permit:
Order of Conditions and 401 Water Quality Certification

C. If you answered "No" to both questions A and B, proceed to the **Water Supply Section**. If you answered "Yes" to either question A or question B, fill out the remainder of the Wetlands, Waterways, and Tidelands Section below.

II. Wetlands Impacts and Permits

A. Does the project require a new or amended Order of Conditions under the Wetlands Protection Act (M.G.L. c.131A)? **X** Yes ___ No; if yes, has a Notice of Intent been filed? ___ Yes **X** No; if yes, list the date and MassDEP file number: ______; if yes, has a local Order of Conditions been issued? ___ Yes ___ No; Was the Order of Conditions appealed? ___ Yes ___ No. Will the project require a Variance from the Wetlands regulations? ___ Yes ___ No.

B. Describe any proposed permanent or temporary impacts to wetland resource areas located on the project site:

Temporary and permanent impacts will be made to River Bank, Bordering Vegetated Wetlands, Land Under Waterbodies, Bordering Land Subject to Flooding, and Riverfront Area. The design drawings show the location of these resource areas.

C. Estimate the extent and type of impact that the project will have on wetland resources, and indicate whether the impacts are temporary or permanent:

Coastal Wetlands	Area (square feet) or Length (linear feet)	Temporary or Permanent Impact?
Land Under the Ocean	N/A	____________
Designated Port Areas	N/A	____________
Coastal Beaches	N/A	____________
Coastal Dunes	N/A	____________
Barrier Beaches	N/A	____________
Coastal Banks	N/A	____________
Rocky Intertidal Shores	N/A	____________
Salt Marshes	N/A	____________
Land Under Salt Ponds	N/A	____________
Land Containing Shellfish	N/A	____________
Fish Runs	N/A	____________
Land Subject to Coastal Storm Flowage	N/A	____________
Inland Wetlands		
Bank (lf)	+50 LF	Permanent
Bordering Vegetated Wetlands	N/A	
Isolated Vegetated Wetlands	N/A	

Land under Water	-34,600 SF	Permanent
Isolated Land Subject to Flooding	N/A	
Bordering Land Subject to Flooding	-20,100 SF	Permanent
Riverfront Area	+251,600 FF	Permanent

D. Is any part of the project:

1. proposed as a **limited project**? X Yes ___ No; if yes, what is the area (in sf)? 54,500_
2. the construction or alteration of a **dam**? **X** Yes ___ No; if yes, describe:

The Becker Pond Dam will be removed and a natural river corridor will be restored through the former impoundment. The dam is currently in poor condition with critical issues to the left training wall and foundation. There is no active regulation of water at the dam, which acts as a run of river dam. The concrete core and earthen embankment will be removed.

3. fill or structure in a **velocity zone** or **regulatory floodway**? __Yes X No
4. dredging or disposal of dredged material? **X** Yes ___ No; if yes, describe the volume of dredged material and the proposed disposal site:

Approximately 1,500 CY of sediment will be passively released downstream. No sediment is planned for active removal and disposal.

5. a discharge to an **Outstanding Resource Water (ORW)** or an **Area of Critical Environmental Concern (ACEC)**? **X** Yes ___ No
6. subject to a wetlands restriction order? ___ Yes _X_ No; if yes, identify the area (in sf):
7. located in buffer zones? X_Yes ___No; if yes, how much (in sf) 8,150SF_

E. Will the project:

1. be subject to a local wetlands ordinance or bylaw? _X_ Yes ___ No
2. alter any federally-protected wetlands not regulated under state law? ___ Yes _X_ No; if yes, what is the area (sf)?

III. Waterways and Tidelands Impacts and Permits

A. Does the project site contain waterways or tidelands (including filled former tidelands) that are subject to the Waterways Act, M.G.L.c.91? **X** Yes ___ No; if yes, is there a current Chapter 91 License or Permit affecting the project site? ___ Yes **X** No; if yes, list the date and license or permit number and provide a copy of the historic map used to determine extent of filled tidelands:

B. Does the project require a new or modified license or permit under M.G.L.c.91? X Yes ___ No; if yes, how many acres of the project site subject to M.G.L.c.91 will be for non-water-dependent use? Current _0__ Change __0_ Total _0__
If yes, how many square feet of solid fill or pile-supported structures (in sf)?

C. For non-water-dependent use projects, indicate the following:
Area of filled tidelands on the site:___**N/A**___________________
Area of filled tidelands covered by buildings:___**N/A**_________
For portions of site on filled tidelands, list ground floor uses and area of each use:
____**N/A**__________
Does the project include new non-water-dependent uses located over flowed tidelands?
Yes ___ No _**X**_
Height of building on filled tidelands________________

Also show the following on a site plan: Mean High Water, Mean Low Water, Water-dependent Use Zone, location of uses within buildings on tidelands, and interior and exterior areas and facilities dedicated for public use, and historic high and historic low water marks.

D. Is the project located on landlocked tidelands? ___ Yes _**X**__ No; if yes, describe the project's impact on the public's right to access, use and enjoy jurisdictional tidelands and describe measures the project will implement to avoid, minimize or mitigate any adverse impact:

E. Is the project located in an area where low groundwater levels have been identified by a municipality or by a state or federal agency as a threat to building foundations? ___Yes **X** No; if yes, describe the project's impact on groundwater levels and describe measures the project will implement to avoid, minimize or mitigate any adverse impact:

F. Is the project non-water-dependent **and** located on landlocked tidelands **or** waterways or tidelands subject to the Waterways Act **and** subject to a mandatory EIR? ___ Yes **X** No;
(NOTE: If yes, then the project will be subject to Public Benefit Review and Determination.)

G. Does the project include dredging? **X** Yes __ No; if yes, answer the following questions:
What type of dredging? Improvement **X** Maintenance ___ Both ____
What is the proposed dredge volume, in cubic yards (cys) 550 (passive release)__
What is the proposed dredge footprint _400 length (ft) _25 width (ft)_1.5_depth (ft);
Will dredging impact the following resource areas?
Intertidal Yes__ No X if yes, ___ sq ft
Outstanding Resource Waters Yes__ No X if yes, ___ sq ft
Other resource area (i.e. shellfish beds, eel grass beds) Yes X No _; if yes __ sq ft **The area of Land Under Waterways within the existing impoundment that we anticipate the natural mobilization of sediment following dam removal is: 10,000 SF**
If yes to any of the above, have you evaluated appropriate and practicable steps to: 1) avoidance; 2) if avoidance is not possible, minimization; 3) if either avoidance or minimize is not possible, mitigation? **Yes, please see discussion of alternatives. The preferred alternative of natural mobilization of impounded sediment following dam removal includes the least amount of dredging within the impoundment. This alternative includes the anticipated natural downstream movement of approximately 550 CY of impounded sediment. This avoids the disturbance of impounded sediment outside the area of anticipated future channel alignment. This volume is the minimum volume of dredge (passive downstream release) required to achieve the dam removal project. If the impounded sediment were to be mechanically removed by heavy machinery, additional dredging and resource area impact would be necessary to gain access to the area of dredging.**
If no to any of the above, what information or documentation was used to support this determination?
Provide a comprehensive analysis of practicable alternatives for improvement dredging in accordance with 314 CMR 9.07(1)(b). Physical and chemical data of the sediment shall be included in the comprehensive analysis.
Sediment Characterization
Existing gradation analysis results? X Yes ___No: if yes, provide results.
Existing chemical results for parameters listed in 314 CMR 9.07(2)(b)6? X Yes ____No; if yes, provide results.
Do you have sufficient information to evaluate feasibility of the following management options for dredged sediment? If yes, check the appropriate option.

Beach Nourishment ___
Unconfined Ocean Disposal ___
Confined Disposal:
Confined Aquatic Disposal (CAD) ___

Confined Disposal Facility (CDF) ___
Landfill Reuse in accordance with COMM-97-001 ___
Shoreline Placement ___
Upland Material Reuse X
In-State landfill disposal X
Out-of-state landfill disposal ____
(NOTE: This information is required for a 401 Water Quality Certification.)

IV. Consistency:

A. Does the project have effects on the coastal resources or uses, and/or is the project located within the Coastal Zone? ___ Yes **X** No; if yes, describe these effects and the projects consistency with the policies of the Office of Coastal Zone Management:

B. Is the project located within an area subject to a Municipal Harbor Plan? ___ Yes **X** No; if yes, identify the Municipal Harbor Plan and describe the project's consistency with that plan:

WATER SUPPLY SECTION

I. Thresholds / Permits

A. Will the project meet or exceed any review thresholds related to **water supply** (see 301 CMR 11.03(4))? ___ Yes **X** No; if yes, specify, in quantitative terms:

B. Does the project require any state permits related to **water supply**? ___ Yes **X** No; if yes, specify which permit:

C. If you answered "No" to both questions A and B, proceed to the **Wastewater Section**. If you answered "Yes" to either question A or question B, fill out the remainder of the Water Supply Section below.

II. Impacts and Permits

A. Describe, in gallons per day (gpd), the volume and source of water use for existing and proposed activities at the project site:

	Existing	Change	Total
Municipal or regional water supply			
Withdrawal from groundwater			
Withdrawal from surface water			
Interbasin transfer			

(NOTE: Interbasin Transfer approval will be required if the basin and community where the proposed water supply source is located is different from the basin and community where the wastewater from the source will be discharged.)

B. If the source is a municipal or regional supply, has the municipality or region indicated that there is adequate capacity in the system to accommodate the project? ___ Yes ___ No

C. If the project involves a new or expanded withdrawal from a groundwater or surface water source, has a pumping test been conducted? ___ Yes ___ No; if yes, attach a map of the drilling sites and a summary of the alternatives considered and the results. _______________

D. What is the currently permitted withdrawal at the proposed water supply source (in gallons per day)? ______Will the project require an increase in that withdrawal? ___Yes ___No; if yes, then how much of an increase (gpd)? _____________________

E. Does the project site currently contain a water supply well, a drinking water treatment facility, water main, or other water supply facility, or will the project involve construction of a new facility? ___ Yes ___No. If yes, describe existing and proposed water supply facilities at the project site:

	Permitted Flow	Existing Avg Daily Flow	Project Flow	Total
Capacity of water supply well(s) (gpd)				
Capacity of water treatment plant (gpd)				

F. If the project involves a new interbasin transfer of water, which basins are involved, what is the direction of the transfer, and is the interbasin transfer existing or proposed?

G. Does the project involve:

1. new water service by the Massachusetts Water Resources Authority or other agency of the Commonwealth to a municipality or water district? ___ Yes ___ No
2. a Watershed Protection Act variance? ___ Yes ___ No; if yes, how many acres of alteration?
3. a non-bridged stream crossing 1,000 or less feet upstream of a public surface drinking

water supply for purpose of forest harvesting activities? ___ Yes ___ No

III. Consistency

Describe the project's consistency with water conservation plans or other plans to enhance water resources, quality, facilities and services:

WASTEWATER SECTION

I. Thresholds / Permits

A. Will the project meet or exceed any review thresholds related to **wastewater** (see 301 CMR 11.03(5))? ___ Yes **X** No; if yes, specify, in quantitative terms:

B. Does the project require any state permits related to **wastewater**? ___ Yes **X** No; if yes, specify which permit:

C. If you answered "No" to both questions A and B, proceed to the **Transportation -- Traffic Generation Section**. If you answered "Yes" to either question A or question B, fill out the remainder of the Wastewater Section below.

II. Impacts and Permits

A. Describe the volume (in gallons per day) and type of disposal of wastewater generation for existing and proposed activities at the project site (calculate according to 310 CMR 15.00 for septic systems or 314 CMR 7.00 for sewer systems):

	Existing	Change	Total
Discharge of sanitary wastewater	________	________	________
Discharge of industrial wastewater	________	________	________
TOTAL	________	________	________

	Existing	Change	Total
Discharge to groundwater	________	________	________
Discharge to outstanding resource water	________	________	________
Discharge to surface water	________	________	________
Discharge to municipal or regional wastewater facility	________	________	________
TOTAL	________	________	________

B. Is the existing collection system at or near its capacity? ___ Yes ___ No; if yes, then describe the measures to be undertaken to accommodate the project's wastewater flows:

C. Is the existing wastewater disposal facility at or near its permitted capacity? ___ Yes___ No; if yes, then describe the measures to be undertaken to accommodate the project's wastewater flows:

D. Does the project site currently contain a wastewater treatment facility, sewer main, or other wastewater disposal facility, or will the project involve construction of a new facility? ___ Yes ___ No; if yes, describe as follows:

	Permitted	Existing Avg Daily Flow	Project Flow	Total
Wastewater treatment plant capacity (in gallons per day)	_______	________	________	________

E. If the project requires an interbasin transfer of wastewater, which basins are involved, what is the direction of the transfer, and is the interbasin transfer existing or new?

(NOTE: Interbasin Transfer approval may be needed if the basin and community where wastewater will be discharged is different from the basin and community where the source of water supply is located.)

F. Does the project involve new sewer service by the Massachusetts Water Resources Authority (MWRA) or other Agency of the Commonwealth to a municipality or sewer district? ___ Yes ___ No

G. Is there an existing facility, or is a new facility proposed at the project site for the storage, treatment, processing, combustion or disposal of sewage sludge, sludge ash, grit, screenings, wastewater reuse (gray water) or other sewage residual materials? ___ Yes ___ No; if yes, what is the capacity (tons per day):

	Existing	Change	Total
Storage	________	________	________
Treatment	________	________	________
Processing	________	________	________
Combustion	________	________	________
Disposal	________	________	________

H. Describe the water conservation measures to be undertaken by the project, and other wastewater mitigation, such as infiltration and inflow removal.

III. Consistency

A. Describe measures that the proponent will take to comply with applicable state, regional, and local plans and policies related to wastewater management:

B. If the project requires a sewer extension permit, is that extension included in a comprehensive wastewater management plan? ___ Yes ___ No; if yes, indicate the EEA number for the plan and whether the project site is within a sewer service area recommended or approved in that plan:

TRANSPORTATION SECTION (TRAFFIC GENERATION)

I. Thresholds / Permit

A. Will the project meet or exceed any review thresholds related to **traffic generation** (see 301 CMR 11.03(6))? ___ Yes **X** No; if yes, specify, in quantitative terms:

B. Does the project require any state permits related to **state-controlled roadways**? ___ Yes **X** No; if yes, specify which permit:

C. If you answered "No" to both questions A and B, proceed to the **Roadways and Other Transportation Facilities Section**. If you answered "Yes" to either question A or question B, fill out the remainder of the Traffic Generation Section below.

II. Traffic Impacts and Permits

A. Describe existing and proposed vehicular traffic generated by activities at the project site:

	Existing	Change	Total
Number of parking spaces	________	_________	________
Number of vehicle trips per day	_________	_________	_________
ITE Land Use Code(s):	_________	_________	_________

B. What is the estimated average daily traffic on roadways serving the site?

Roadway	Existing	Change	Total
1. ____________________	_________	_________	_________
2. _____________________	_________	_________	_________
3. _____________________	_________	_________	_________

C. If applicable, describe proposed mitigation measures on state-controlled roadways that the project proponent will implement:

D. How will the project implement and/or promote the use of transit, pedestrian and bicycle facilities and services to provide access to and from the project site?

C. Is there a Transportation Management Association (TMA) that provides transportation demand management (TDM) services in the area of the project site? ____ Yes ____ No; if yes, describe if and how will the project will participate in the TMA:

D. Will the project use (or occur in the immediate vicinity of) water, rail, or air transportation facilities? ____ Yes ____ No; if yes, generally describe:

E. If the project will penetrate approach airspace of a nearby airport, has the proponent filed a Massachusetts Aeronautics Commission Airspace Review Form (780 CMR 111.7) and a Notice of Proposed Construction or Alteration with the Federal Aviation Administration (FAA) (CFR Title 14 Part 77.13, forms 7460-1 and 7460-2)?

III. Consistency

Describe measures that the proponent will take to comply with municipal, regional, state, and federal plans and policies related to traffic, transit, pedestrian and bicycle transportation facilities and services:

TRANSPORTATION SECTION (ROADWAYS AND OTHER TRANSPORTATION FACILITIES)

I. Thresholds

A. Will the project meet or exceed any review thresholds related to **roadways or other transportation facilities** (see 301 CMR 11.03(6))? ___ Yes **X** No; if yes, specify, in quantitative terms:

B. Does the project require any state permits related to **roadways or other transportation facilities**? ___ Yes **X** No; if yes, specify which permit:

C. If you answered "No" to both questions A and B, proceed to the **Energy Section**. If you answered "Yes" to either question A or question B, fill out the remainder of the Roadways Section below.

II. Transportation Facility Impacts

A. Describe existing and proposed transportation facilities in the immediate vicinity of the project site:

B. Will the project involve any

1. Alteration of bank or terrain (in linear feet)? ____________
2. Cutting of living public shade trees (number)? ____________
3. Elimination of stone wall (in linear feet)? ____________

III. Consistency -- Describe the project's consistency with other federal, state, regional, and local plans and policies related to traffic, transit, pedestrian and bicycle transportation facilities and services, including consistency with the applicable regional transportation plan and the Transportation Improvements Plan (TIP), the State Bicycle Plan, and the State Pedestrian Plan:

ENERGY SECTION

I. Thresholds / Permits

A. Will the project meet or exceed any review thresholds related to **energy** (see 301 CMR 11.03(7))?
___ Yes **X** No; if yes, specify, in quantitative terms:

B. Does the project require any state permits related to **energy**? ___ Yes **X** No; if yes, specify which permit:

C. If you answered "No" to both questions A and B, proceed to the **Air Quality Section**. If you answered "Yes" to either question A or question B, fill out the remainder of the Energy Section below.

II. Impacts and Permits

A. Describe existing and proposed energy generation and transmission facilities at the project site:

	Existing	Change	Total
Capacity of electric generating facility (megawatts)	________	________	________
Length of fuel line (in miles)	________	________	________
Length of transmission lines (in miles)	________	________	________
Capacity of transmission lines (in kilovolts)	________	________	________

B. If the project involves construction or expansion of an electric generating facility, what are:

1. the facility's current and proposed fuel source(s)?
2. the facility's current and proposed cooling source(s)?

C. If the project involves construction of an electrical transmission line, will it be located on a new, unused, or abandoned right of way? ___Yes ___No; if yes, please describe:

D. Describe the project's other impacts on energy facilities and services:

III. Consistency

Describe the project's consistency with state, municipal, regional, and federal plans and policies for enhancing energy facilities and services:

AIR QUALITY SECTION

I. Thresholds

A. Will the project meet or exceed any review thresholds related to **air quality** (see 301 CMR 11.03(8))? ___ Yes **X** No; if yes, specify, in quantitative terms:

B. Does the project require any state permits related to **air quality**? ___ Yes **X** No; if yes, specify which permit:

C. If you answered "No" to both questions A and B, proceed to the **Solid and Hazardous Waste Section**. If you answered "Yes" to either question A or question B, fill out the remainder of the Air Quality Section below.

II. Impacts and Permits

A. Does the project involve construction or modification of a major stationary source (see 310 CMR 7.00, Appendix A)? ___ Yes ___ No; if yes, describe existing and proposed emissions (in tons per day) of:

	Existing	Change	Total
Particulate matter	________	________	________
Carbon monoxide	________	________	________
Sulfur dioxide	________	________	________
Volatile organic compounds	________	________	________
Oxides of nitrogen	________	________	________
Lead	________	________	________
Any hazardous air pollutant	________	________	________
Carbon dioxide	________	________	________

B. Describe the project's other impacts on air resources and air quality, including noise impacts:

III. Consistency

A. Describe the project's consistency with the State Implementation Plan:

B. Describe measures that the proponent will take to comply with other federal, state, regional, and local plans and policies related to air resources and air quality:

SOLID AND HAZARDOUS WASTE SECTION

I. Thresholds / Permits

A. Will the project meet or exceed any review thresholds related to **solid or hazardous waste** (see 301 CMR 11.03(9))? ___ Yes **X** No; if yes, specify, in quantitative terms:

B. Does the project require any state permits related to **solid and hazardous waste**? _ Yes **X** No; if yes, specify which permit:

C. If you answered "No" to <u>both</u> questions A and B, proceed to the **Historical and Archaeological Resources Section**. If you answered "Yes" to <u>either</u> question A or question B, fill out the remainder of the Solid and Hazardous Waste Section below.

II. Impacts and Permits

A. Is there any current or proposed facility at the project site for the storage, treatment, processing, combustion or disposal of solid waste? ___ Yes ___ No; if yes, what is the volume (in tons per day) of the capacity:

	Existing	Change	Total
Storage	________	________	________
Treatment, processing	________	________	________
Combustion	________	________	________
Disposal	________	________	________

B. Is there any current or proposed facility at the project site for the storage, recycling, treatment or disposal of hazardous waste? ___ Yes ___ No; if yes, what is the volume (in tons or gallons per day) of the capacity:

	Existing	Change	Total
Storage	________	________	________
Recycling	________	________	________
Treatment	________	________	________
Disposal	________	________	________

C. If the project will generate solid waste (for example, during demolition or construction), describe alternatives considered for re-use, recycling, and disposal:

D. If the project involves demolition, do any buildings to be demolished contain asbestos?
___ Yes ___ No

E. Describe the project's other solid and hazardous waste impacts (including indirect impacts):

III. Consistency

Describe measures that the proponent will take to comply with the State Solid Waste Master Plan:

HISTORICAL AND ARCHAEOLOGICAL RESOURCES SECTION

I. Thresholds / Impacts

A. Have you consulted with the Massachusetts Historical Commission? ___ Yes **X** No; if yes, attach correspondence. For project sites involving lands under water, have you consulted with the Massachusetts Board of Underwater Archaeological Resources? ____Yes **X** No; if yes, attach correspondence
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B. Is any part of the project site a historic structure, or a structure within a historic district, in either case listed in the State Register of Historic Places or the Inventory of Historic and Archaeological Assets of the Commonwealth? ___ Yes **X** No; if yes, does the project involve the demolition of all or any exterior part of such historic structure? ___ Yes ___ No; if yes, please describe:

C. Is any part of the project site an archaeological site listed in the State Register of Historic Places or the Inventory of Historic and Archaeological Assets of the Commonwealth? ___ Yes X No; if yes, does the project involve the destruction of all or any part of such archaeological site? ___ Yes ___ No; if yes, please describe:

D. If you answered "No" to <u>all parts of both</u> questions A, B and C, proceed to the **Attachments and Certifications** Sections. If you answered "Yes" to <u>any part of either</u> question A or question B, fill out the remainder of the Historical and Archaeological Resources Section below.

II. Impacts

Describe and assess the project's impacts, direct and indirect, on listed or inventoried historical and archaeological resources:

III. Consistency

Describe measures that the proponent will take to comply with federal, state, regional, and local plans and policies related to preserving historical and archaeological resources:

CERTIFICATIONS:

1. The Public Notice of Environmental Review has been/will be published in the following newspapers in accordance with 301 CMR 11.15(1):

   (Name)_Berkshire Eagle_____________(Date)_____5/29/20_________________

2. This form has been circulated to Agencies and Persons in accordance with 301 CMR 11.16(2).

Signatures:

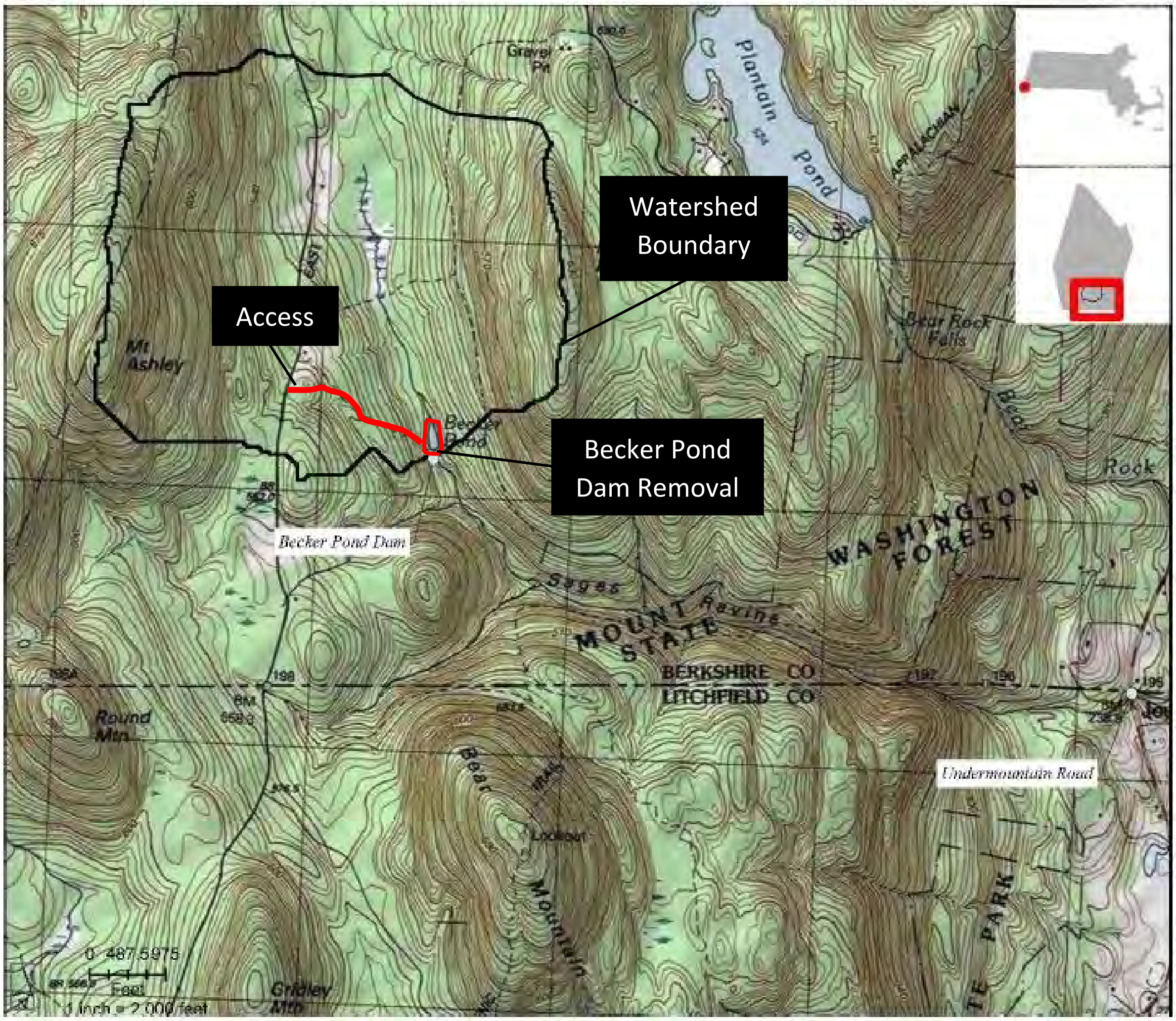
5-29-20	Karen Lombard	5/29/20	Candice Constantine
Date	Signature of Responsible Officer or Proponent	Date	Signature of person preparing ENF (if different from above)

Karen Lombard	Candice Constantine
Name (print or type)	Name (print or type)
The Nature Conservancy	Inter-Fluve, Inc.
Firm/Agency	Firm/Agency
136 West St., Suite 202	63 Spring Street, 2nd Floor, Suite J
Street	Street
Northampton, MA 01060	Williamstown, MA 01267
Municipality/State/Zip	Municipality/State/Zip
413-923-3174	617-909-7569
Phone	Phone

Attachment 1: List of all attachments

1. List of all attachments to this document.
2. U.S.G.S. map.
3. Photos of the project site
4. Basis of design memo, including hydrology and hydraulics analysis, climate change impacts discussion, and sediment management plan
5. Rationale for sediment management approach by MA DER
6. Communication with NHESP regarding rare species
7. Maps showing proximity of project to resource areas
8. Design drawings for the removal of Becker Pond Dam
9. List of all agencies and persons to whom the proponent circulated the EENF, in accordance with 301 CMR 11.16(2).
10. List of municipal and federal permits and reviews required by the project, as applicable.

Attachment 2: USGS map indicating project location and boundaries



Attachment 3: Photos of the project site

Looking across Becker Pond Dam at the spillway and the wooden bridge. The orange fencing is in place due to the unsafe condition of the abutments and the bridge.

Looking upstream from the dam at the impoundment.


Stream downstream of Becker Pond Dam


Access road to Becker Pond Dam

Attachment 4: Basis of design report, including hydrology and hydraulics analysis, climate change impacts discussion, and sediment management plan

See separate file

Attachment 5: Communication with NHESP regarding rare species

From: Karen Lombard
To: Candice Constantine PhD (cconstantine@interfluve.com)
Subject: FW: Becker Pond Dam 30% design - Mt. Washington
Date: Wednesday, August 29, 2018 1:46:54 PM
Attachments: image001.png
Becker Pond Dam Removal 30% Design Memo 061318.pdf
IFI_BeckerPond_061318_PLANS.pdf

FYI from Heritage – we know we need to address in final design, once we know whether we are using the road or constructing the new road, but wanted to you have the email.

Karen

From: Marold, Misty-Anne (FWE) <misty-anne.marold@state.ma.us>
Sent: Friday, August 10, 2018 9:24 AM
To: Karen Lombard <klombard@TNC.ORG>
Cc: Buelow, Chris (FWE) <chris.buelow@state.ma.us>; Cheeseman, Melany (FWE) <melany.cheeseman@state.ma.us>; Holt, Emily (FWE) <emily.holt@state.ma.us>
Subject: FW: Becker Pond Dam 30% design - Mt. Washington

Re: NHESP 18-37448, Mount Washington, Becker Pond Dam

Hi Karen,

Thanks for the plans. The work around the dam itself is not problematic from a habitat alteration perspective. I'm a little confused by the plan relative to the access road. On sheet 4 or 7, there is a shaded orange/brown area around the existing access road (which is grey lines). I can't find any description of what that shading represents unless it is the color for "staging" from sheet 2? Will there be any improvements to the access road (e.g., adding gravel, widening, tree limbing, etc.)?

We also discussed that we were hoping the road would not be opened during the active season. Would you anticipate keeping the gate closed expect in winter after the project? Finally, if there is sufficient concrete block/debris, that a pile of it could be created off the trail/road as habitat enhancement. It likely only makes sense if you get larger slabs.

Best, Misty-Anne

Misty-Anne R. Marold
Senior Endangered Species Review Biologist
Natural Heritage & Endangered Species Program
Massachusetts Division of Fisheries & Wildlife
1 Rabbit Hill Road, Westborough, MA 01581
p: (508) 389-6356 | f: (508) 389-7890
mass.gov/masswildlife | facebook.com/masswildlife

From: Holt, Emily (FWE)
Sent: Tuesday, August 07, 2018 3:24 PM

To: Marold, Misty-Anne (FWE)
Subject: FW: Becker Pond Dam 30% design - Mt. Washington

I left the hard copies in your inbox.

From: Karen Lombard [mailto:klombard@TNC.ORG]
Sent: Thursday, July 19, 2018 9:07 AM
To: Holt, Emily (FWE)
Subject: Becker Pond Dam 30% design - Mt. Washington

Hi Emily,
I wanted to submit the 30% design for the Becker Pond dam removal as it was completed in June. Unfortunately I'm having trouble locating the letter with the project number for this project (a preliminary plan was submitted last winter and Misty-Anne Marold wrote the letter). We'll be starting the wetlands etc permitting this fall.

If you could locate the letter, would you mind sending me another copy. I must have misfiled it.

Thank you,
Karen

Karen Lombard
Director of Stewardship & Restoration
klombard@tnc.org
(413) 923-3174 (Office)
(617) 699-2438 (Mobile)

nature.org

The Nature Conservancy
Massachusetts Field Office

136 West St., Suite 5
Northampton, MA 01060

TNC Logo

Attachment 6: Rationale for sediment management approach by MA DER

Becker Pond Dam Removal

Mt. Washington, MA

Rationale for Sediment Management Approach

Author: Massachusetts Division of Ecological Restoration

As further described below, the sediment management plan is based on the following factors:

1. The sediment that will be mobilized is identical in its chemical characteristics to the sediment both upstream and downstream of the site.
2. Physical removal of the impounded sediments would require access into and excavation within the impoundment area, causing unnecessary impacts to Resource Areas, and associated Buffer Zone.
3. Ecological and recreational impacts to downstream areas are anticipated to be minimal and short-lived.
4. Implementation of the dam removal outside of the most sensitive time of year for resident fish species will greatly reduce the risk of any short-term negative effects on those species from reintroduction of the natural sediment transport regime.
5. Careful sequencing of the work elements, along with construction oversight by the Engineer-of-Record to ensure the proper implementation of this method to maximize benefits.

It should first be noted that the sediment being discussed is that which currently resides within the impoundment, and is composed of organic and mineral material found naturally below Mean Annual High Water/Ordinary High Water, and already within other reaches of the stream. It is not soil that would potentially erode from adjacent upland areas and be deposited into the former impoundment area and/or stream stream during and/or immediately after construction. Sedimentation from upland areas will be prevented through the use of the structural (e.g. silt fence and erosion control fabric) and nonstructural (e.g. project sequencing and timing) methods shown in the permitting documents.

As stated in the DEP guidance document "Dam Removal and the Wetlands Regulations"[1], dams are capable of trapping up to 95 percent of the sediment that moves down a stream. Accordingly, one of the primary ecological goals of any dam removal is the restoration of the natural sediment transport regime. That is, reestablishment of natural sediment movement is an intentional effect of the project, rather than something to be avoided.

Factor 1- Sediment Characteristics

As described in the Inter-Fluve, Inc. (IFI) sediment management technical memorandum[2], extensive chemical and physical analysis of the impounded sediments as well as those taken from upstream and downstream was conducted per the due diligence study and guidelines from 414 CMR 9.07(2). The results show that the sediment to be mobilized is clean and nearly identical to sediments found elsewhere in the system. While observations of the channel downstream indicate a much lower proportion of sand, sand is present in all reaches of the stream, except for bedrock cascades.

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[1] Available at: http://www.mass.gov/dep/water/resources/dmpol.pdf

[2] Inter-Fluve, Inc. (2019). *Becker Pond Dam Removal – Sediment Management Plan*. Cambridge, MA.

Factor 2- Impacts from excavation

Excavation of the sediment to form a channel through the impoundment would require additional short-term impacts from accessing the impoundment with machinery as well as for the water control system. Impacts are associated with the footprint of the machine, stabilization of the access point, and the set-up and demobilization of the water control system. In addition, this action would also increase costs and logistical challenge of the project. Due to the unconsolidated nature of impounded sediments, creating even a "starter channel" typically requires water diversions to allow the machine to work in the relative dry. This often requires installation of temporary cofferdams, pipes, and other barriers, as well as the pumping and treatment of water that accumulates in the work area. All of this additional disturbance can increase the chance for invasive plants to colonize, possibly altering the successional trajectory of the former impoundment area post dam removal.

Factor 3- Anticipated impacts

Anticipated ecological and recreational impacts are minimal and temporary. Some concern raised over so-called "instream management" of impounded sediments at other dam removal sites revolve around the mistaken belief that the released sediment moves downstream in a single slug, similar to what might be expected in a catastrophic dam failure. On the contrary, previous employment of this method in Massachusetts and elsewhere has shown that the material moves gradually over the first year following implementation of dam removal activity[3]. Research on sediment movement following the removal of the Bartlett Rod Shop Dam in Pelham, Massachusetts documented this phenomenon particularly well[4]. Controlled sediment release is also promoted by the fact that dam removal work is usually done during lower flow periods. This, along with a gradual drawdown of the impoundment, can allow for the consolidation, vegetation, and stabilization of a portion of the impounded sediments so that they don't transport.

The step-pool morphology of the brook downstream of Becker Pond is analogous to the reach of Thunder Brook in Cheshire where a dam was removed in 2012. While the Thunder Brook Dam removal did include the mechanical removal of 800 CY of sand and silt, the natural reestablishment of the sediment transport regime did result in the deposition of sand in the pools downstream of the dam. However, due to the channel slope and seasonal high flows in that system, the accumulated sand was resuspended and moved through the system naturally within the first two years. While sediment transport was not monitored at this site, fish[5] and benthic[6] community surveys were completed. Both showed no detrimental effects to either of these components of coldwater communities.

Another important consideration for the Becker Pond Dam removal is the presence of Sages Ravine downstream of the dam. As described in IFI's sediment management technical memorandum, Sages Ravine is a popular swimming, camping and picnicking spot on the brook. It is mainly accessed via the Appalachian Trail since the ravine is particularly challenging to ascend from downstream. The presence of several pools near the intersection of the brook with the Appalachian Trail make this spot a valuable recreational resource. Some past dam removal projects have caused public outcry due to the temporary settlement of sediment in riverine swimming holes or fishing spots.

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[3] Pearson, A. J., N. P. Snyder, and M. J. Collins (2011), Rates and processes of channel response to dam removal with a sand filled impoundment, Water Resour. Res., 47, W08504, doi:10.1029/2010WR009733.

[4] F.J. Magilligan, K.H. Nislow, B.E. Kynard, A.M. Hackman (2016). Immediate changes in stream channel geomorphology, aquatic habitat, and fish assemblages following dam removal in a small upland catchment. Geomorphology, Vol. 252, 158-170.

[5] Electrofishing surveys conducted by Professor Elena Traister of the MA College of Liberal Arts under permit from the MA Division of Fisheries & Wildlife. Unpublished. Email and MS Excel data available form DER upon request.

[6] Watershed Assessment Associates. 2015. Benthic Macroinvertebrate Survey Report. For Ma DER. Available upon request.

In December of 2019, DER staff followed the ravine upstream from State Route 41 to the Appalachian Trail to make observations complementary to Inter-Fluve's observations of the brook between the dam and the Trail in May 2019. Morphologically, the reach observed by DER is significantly steeper, than that observed by IFI upstream. However, consistent with IFI's observations upstream, there are several pools that will likely offer temporary storage of sediment moving through the system, particularly where the channel is constrained by large boulders and/or log debris jams. However, given the steep channel and the presence of regular steps that cause turbidity and sediment evacuation, neither observed reach can be considered a true depositional reach[7]. As noted in IFI's sediment management technical memorandum, there will be small areas of permanent deposition, such as secondary channels and low lying areas of the floodplain. However, given the morphology of the system, these areas are limited. Sediment from the Becker Pond Dam removal will move through these reaches as stream hydraulics allow. Sand will accumulate in pools for periods of time, then be flushed out with higher flows in the vast majority of cases.

In the 2016 removal of the Winchell Reservoir Dam on Munn Brook in Granville, MA, approximately 2,200 CY of sediment was allowed to move downstream. This release of sediment caused concern among fishermen and recreators who used the various pools downstream. They observed large quantities of sand and gravel moving through the system, substantially altering the channel they were accustomed to.

Unfortunately, the sediment movement was not monitored. In response to fishermen's concerns, the Massachusetts Division of Fisheries and Wildlife (DFW) conducted a fish community survey of the reaches downstream from the former dam. The unpublished 2018 effort found eastern brook trout (*Salvelinus fontinalis*), slimy sculpin (*Cottus cognatus*), blacknose dace (*Rhinichthys atratulus*), and American eel (*Anguilla rostrata*) near Granville Road with increasing diversity further downstream. This demonstrates that there has been no long-term impairment to the Coldwater Fishery Resource of Munn Brook from the dam removal. This finding is consistent with DFW's perspective on sediment remobilization from other dam removals. DFW biologists typically view any impacts to inland fisheries as short-term and within the level of disturbance those species are evolved to tolerate. Benefits from dam removal are understood to outweigh these temporary impacts. DFW biologists have offered this opinion in regulatory comments and informal project guidance on several occasions.

DFW also collected pebble count data at various locations to describe the evolution of the substrate as has been completed by DER for the Tack Factory Dam Removal in Hanover/Norwell. DER intends to replicate the Munn Brook DFW pebble counts in summer of 2020.

Likely effects from the proposed release of sediment from the Becker Pond Dam removal are anticipated to be less than those from the removal of the Winchell Reservoir Dam mainly due to the steeper channel slope on the Becker Pond brook. According to USGS StreamStats, the mean slope of the contributing watershed to Sages Ravine is 19.2 percent. The mean slope of the contributing watershed to Granville Gorge is only 8.2 percent. This indicates a greater chance for sediment to move through the system downstream of Becker Pond compared to Winchell Reservoir, though some pools will certainly hold more sediment longer than others.

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[7] Montana Department of Natural Resources and Conservation (2011). Montana Stream Permitting. Chapter 1. Accessed via the internet at: http://dnrc.mt.gov/licenses-and-permits/stream-permitting-book/

Factor 4- Timing

DER has consulted with Andrew Madden, the Western District Supervisor and Leanda Fontaine, the Western District fisheries biologist for MA DFW about this project. They have informed us that October and November are the typical spawning months for brook trout in this stream. DFW prefers that projects avoid excessive turbidity during this time. In addition, the "rearing window" of June thru September can be important for trout an excess turbidity should also be avoided.

While DFW has been lenient with time-of-Year restrictions on dam removal and river restoration projects in the past, TNC and DER will continue to refine the project schedule with input from DFW during the MEPA and permitting process. Project implementation will be timed to avoid impacts to the existing fish community to the maximum extent practical.

Factor 5- Sequencing and Oversight

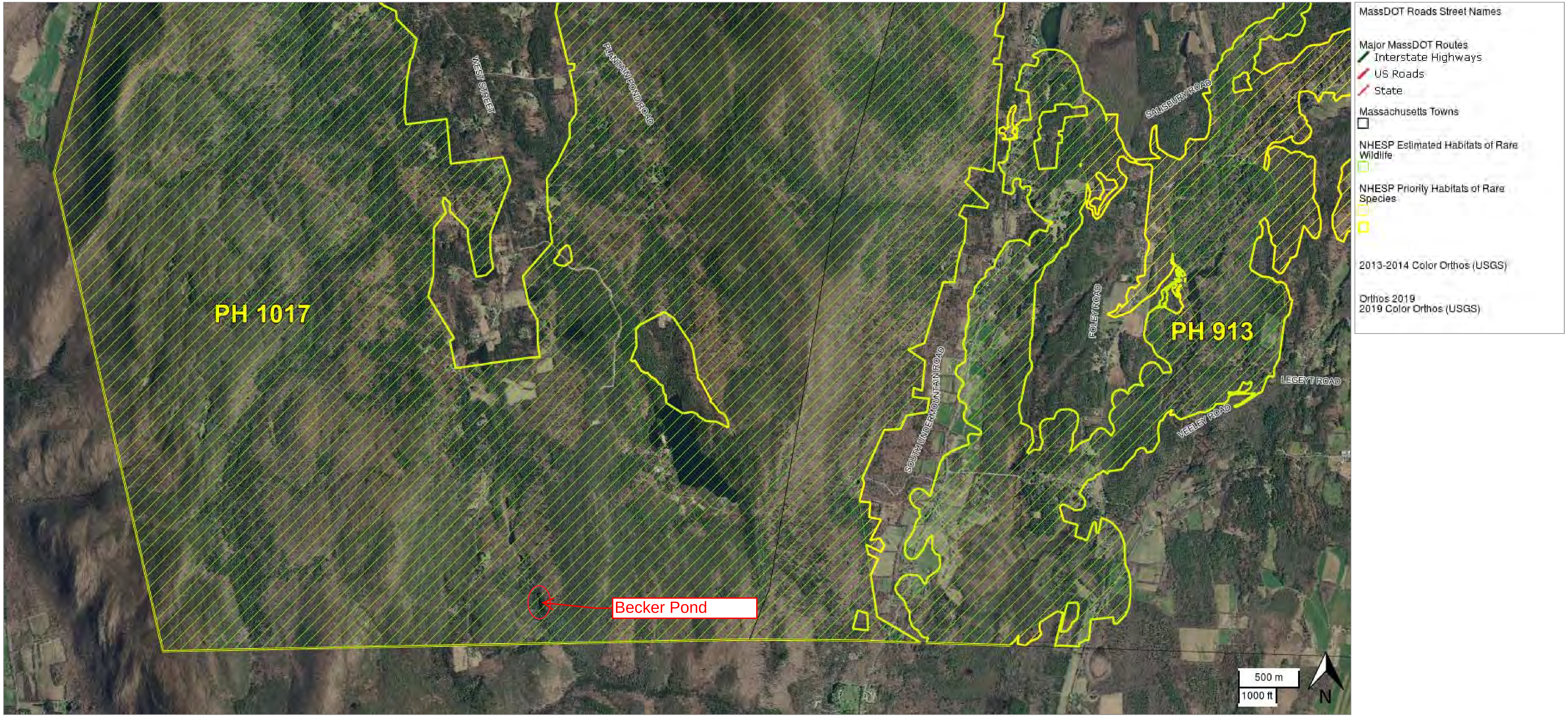
The proposed project has been designed by a multi-disciplinary firm with more Massachusetts barrier removal experience that nearly any other. Input from dam removal experts at DER and TNC, and wildlife biologists from DFW has also guided the project. This level of guidance will also carry through to implementation with regular oversight of the work to ensure adherence to the permits and design plans.

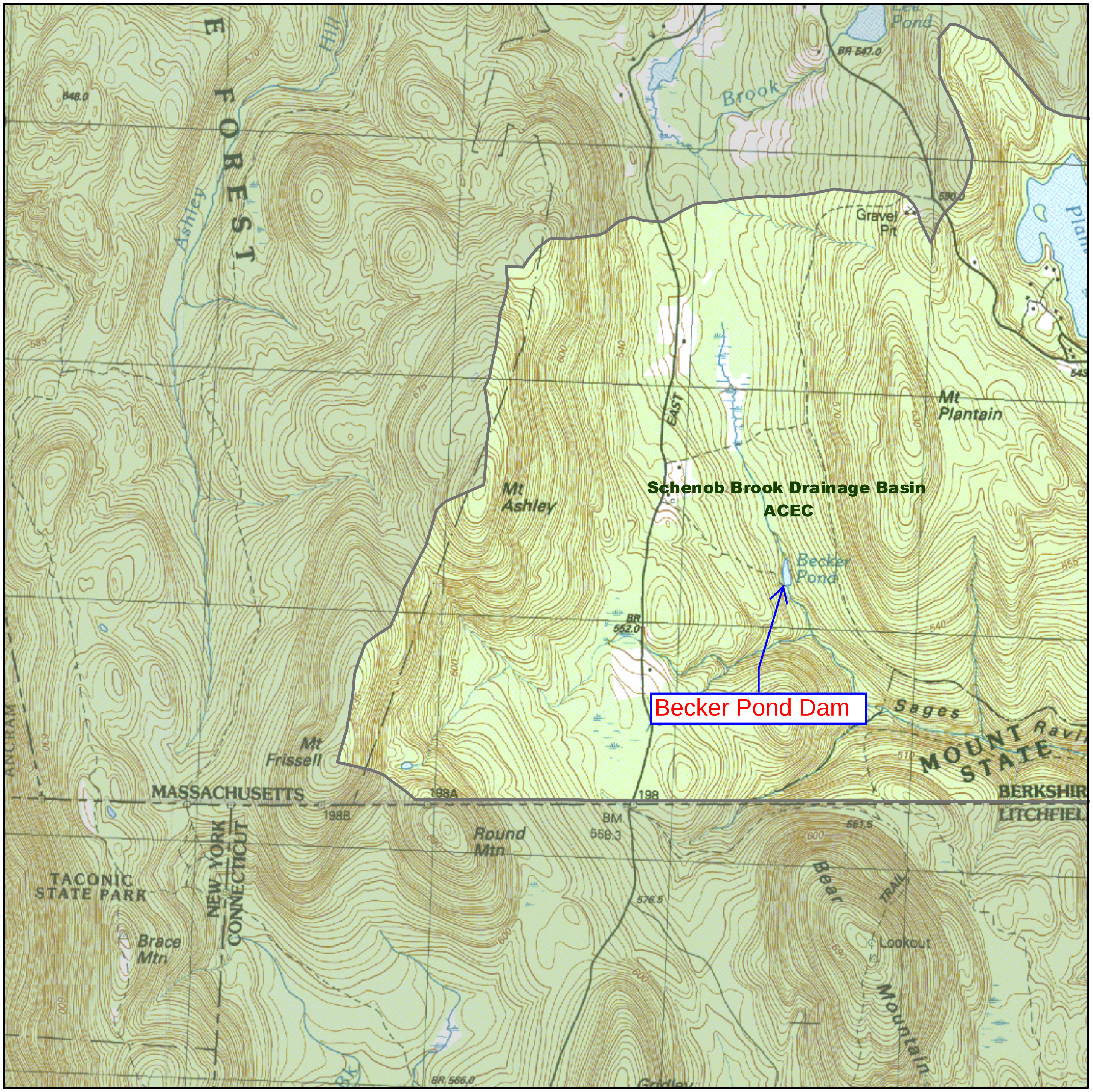
The project contractor will implement best practices to prevent upland soil from eroding into resource areas and will limit disturbance to an appropriate accessway. The contractor will make every effort to initiate an early, slow drawdown of the impoundment in order to stabilize as much sediment in place. During construction, the contractor will mechanically remove sediment opportunistically to ensure consistent, moderate flow of water and sediment. In addition, the contractor and project team will monitor weather forecasts and take precautions against massive sediment movement if at all possible.

As noted above, sediment movement was not monitored at the Winchell Dam site. Sediment monitoring will be a component of the Becker Pond Dam Removal Project, which will help to document the migration of material downstream, and can help inform future dam removal projects. The specifics of this monitoring program will be developed during the remainder of the design and permit process, and informed by regulatory outcomes.

Attachment 7: Maps showing proximity of project to resource area boundaries

Becker Pond Priority Habitat

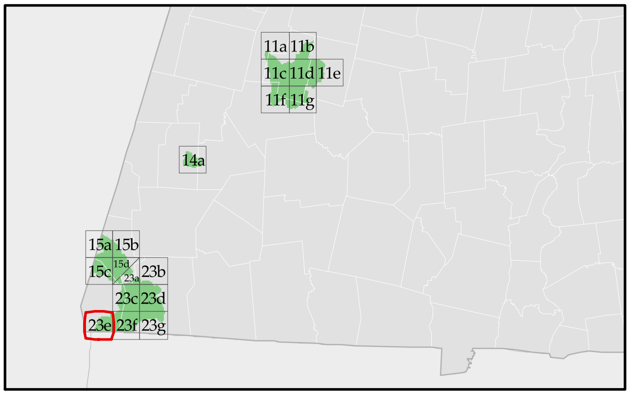




Map # **23e**

Schenob Brook Drainage Basin ACEC

Map Tile 5 of 7 ACEC Designated 8/10/90 13,730 Acres



Massachusetts Department of Conservation and Recreation

Areas of Critical Environmental Concern (ACEC) Program

This map is intended to be used with the written boundary description contained in the ACEC designation document. The mapped boundary is not to be used by itself for definitive ACEC boundary delineation or regulatory interpretation. For review of site-specific projects within the ACEC boundary, determinations may need to be made in the field or in consultation with ACEC Program Staff.

For more information:

www.mass.gov/dcr/stewardship/acec

ACEC Boundaries by Type

- Road/Rail based
- River based
- Wetland based
- Floodplain based
- Tide based
- Contour based
- Political boundary
- Property line based
- Other
- Digital update required

Areas not within an ACEC are shaded with a gray mask.

dcr
Massachusetts

0.25
miles

N

Attachment 8: Design drawings for the removal of Becker Pond Dam

See separate file

Attachment 9: EENF Distribution List, in accordance with 301CMR 11.16(2)

Agency	Email Address	Address
Department of Environmental Protection, Boston Office	helena.boccadoro@mass.gov	**Commissioner's Office** One Winter Street Boston, MA 02108
Department of Environmental Protection, Appropriate Regional Office and to each program from which a permit will be sought	kathleen.fournier@mass.gov	**DEP/Western Regional Office** Attn: MEPA Coordinator State House West - 4th floor 436 Dwight Street Springfield, MA 01103
	george.zoto@mass.gov jonathan.hobill@mass.gov	**DEP/Southeastern Regional Office** Attn: MEPA Coordinator 20 Riverside Drive Lakeville, MA 02347
	andrea.briggs@mass.gov	**DEP/Central Regional Office** Attn: MEPA Coordinator 8 New Bond Street Worcester, MA 01606
	john.d.viola@mass.gov	**DEP/Northeast Regional Office** Attn: MEPA Coordinator 205B Lowell Street Wilmington, MA 01887
Massachusetts Department of Transportation	lionel.lucien@dot.state.ma.us	**Public/Private Development Unit** 10 Park Plaza, Suite #4150 Boston, MA 02116
Applicable MassDOT District Office	patrick.tierney@dot.state.ma.us	**District #1** Attn: MEPA Coordinator 270 Main Street Lenox, MA 01240
	bao.lang@dot.state.ma.us	**District #2** Attn: MEPA Coordinator 811 North King Street Northampton, MA 01060
	lori.shattuck@dot.state.ma.us	**District #3** Attn: MEPA Coordinator 403 Belmont Street Worcester, MA 01604
	connie.raphael@dot.state.ma.us	**District #4** Attn: MEPA Coordinator 519 Appleton Street Arlington, MA 02476
	barbara.lachance@dot.state.ma.us	**District #5** Attn: MEPA Coordinator 1000 County Street Taunton, MA 02780
	amitai.lipton@dot.state.ma.us	**District #6** Attn: MEPA Coordinator 185 Kneeland Street Boston, MA 02111

Massachusetts Historical Commission	See MHC website.	**The MA Archives Building** 220 Morrissey Boulevard Boston, MA 02125
In each municipality affected by the Project	Coordinate with each municipality.	**City Council or Board of Selectmen** **Planning Board/Department** **Conservation Commission** **Department/Board of Health**
If the project is in a Coastal Zone Community	robert.boeri@mass.gov patrice.bordonaro@mass.gov	**Coastal Zone Management** Attn: Project Review Coordinator 251 Causeway Street, Suite 800 Boston, MA 02114
	DMF.EnvReview-North@mass.gov	**From Hull to New Hampshire Border** DMF – North Shore Attn: Environmental Reviewer 30 Emerson Avenue Gloucester, MA 01930
	DMF.EnvReview-South@mass.gov	**From Cohasset to Rhode Island Border** DMF – South Shore Attn: Environmental Reviewer 836 South Rodney French Blvd New Bedford, MA, 02744
If the project site has been in agricultural use within the last fifteen years	barbara.hopson@mass.gov	**Department of Agricultural Resources** Attn: MEPA Coordinator 138 Memorial Avenue, Suite 42 West Springfield, MA 01089
If the Project site is within or contains designated significant or estimated habitat, or priority sites of endangered or threatened species or species of special concern in accordance with the Massachusetts Endangered Species Act	melany.cheeseman@mass.gov emily.holt@mass.gov	**Natural Heritage and Endangered Species Program** Division of Fisheries & Wildlife 1 Rabbit Hill Road Westborough, MA 01581
If the Project affects DCR roadways, watersheds or other properties	nathaniel.tipton@mass.gov	**DCR** Attn: MEPA Coordinator 251 Causeway St. Suite 600 Boston MA 02114

If the Project implicates public health impacts	DPHToxicology@State.MA.US	**Department of Public Health** Director of Environmental Health 250 Washington Street Boston, MA 02115
If the Project is subject to Greenhouse Gas Emissions Policy or to review by Energy Facilities Siting Board	andrew.greene@mass.gov geneen.bartley@mass.gov	**Energy Facilities Siting Board** Attn: MEPA Coordinator One South Station Boston, MA 02110
	paul.ormond@mass.gov brendan.place@mass.gov	**Department of Energy Resources** Attn: MEPA Coordinator 100 Cambridge Street, 10th floor Boston, MA 02114
If the Project is in a municipality served by the Massachusetts Water Resources Authority (MWRA)	katherine.ronan@mwra.com	**Massachusetts Water Resource Authority** Attn: MEPA Coordinator 100 First Avenue Charlestown Navy Yard Boston, MA 02129
If the Project affects Massachusetts Bay Transportation Authority (MBTA) facilities or properties	MEPAcoordinator@mbta.com	**Massachusetts Bay Transit Authority** Attn: MEPA Coordinator 10 Park Plaza, 6th Fl. Boston, MA 02116-3966

Additional recipients:
Mount Washington Select Board:
jimlovejoy@townofmtwashington.com
gailg@townofmtwashington.com
'briantobin@townofmtwashington.com'
Mount Washington Con Com: bengtgranskog@townofmtwashington.com
Mount Washington Planning Board: billshort@townofmtwashington.com
Mount Washington Board of Health: ellielovejoy@townofmtwashington.com
Massachusetts Historical Commission:
The MA Archives Building
220 Morrissey Boulevard
Boston, MA 02125

Attachment 10: List of permits required by the project

Agency	Permit/License
MassDEP	Wetlands Protection Act Notice of Intent WW26 Combined Ch91 dredge permit/401 Water Quality Certification
Mt. Washington Conservation Commission	Wetlands Protection Act Notice of Intent
Army Corps of Engineers	Section 404 General Permit

The Commonwealth of Massachusetts
Executive Office of Energy and Environmental Affairs
100 Cambridge Street, Suite 900
Boston, MA 02114

Charles D. Baker
GOVERNOR

Karyn E. Polito
LIEUTENANT GOVERNOR

Kathleen A. Theoharides
SECRETARY

Tel: (617) 626-1000
Fax: (617) 626-1181
http://www.mass.gov/eea

July 31, 2020

CERTIFICATE OF THE SECRETARY OF ENERGY AND ENVIRONMENTAL AFFAIRS ON THE EXPANDED ENVIRONMENTAL NOTIFICATION FORM

PROJECT NAME : Becker Pond Dam Removal
PROJECT MUNICIPALITY : Mt. Washington
PROJECT WATERSHED : Housatonic River
EEA NUMBER : 16226
PROJECT PROPONENT : The Nature Conservancy
DATE NOTICED IN MONITOR : June 10, 2020

Pursuant to the Massachusetts Environmental Policy Act (MEPA; M.G. L. c. 30, ss. 61-62I) and Sections 11.06 of the MEPA regulations (301 CMR 11.00), I have reviewed the Expanded Environmental Notification Form (EENF) and hereby determine that this project **requires** the preparation of an Environmental Impact Report (EIR). To streamline the review of this project which has been identified as a designated Priority Project by the Division of Ecological Restoration (DER), I will allow the Proponent to prepare a Single EIR pursuant to 11.06(8) rather than a Draft and Final EIR.[1]

Project Description

As described in the Expanded Environmental Notification Form (EENF), the Proponent, the Nature Conservancy, proposes to remove the Becker Pond Dam and restore an unnamed brook that joins Schenob Brook downstream of Sages Ravine. The project involves the excavation and removal of the dam and the related excavation of a stream channel. The project is intended to restore natural flow of the unnamed brook, improve fish passage, and eliminate a source of thermal stress on an important designated coldwater fishery stream.

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[1] The EENF included a request that I grant a Waiver from the requirement to prepare a Mandatory EIR. The Proponent's consultant submitted a request that I allow a Single EIR to be prepared in lieu of the usual two-stage Draft and Final EIR process, in the event that I decline to grant a full EIR Waiver.

The dam is a 95-foot (ft) long earthen embankment with a concrete core wall. The structural height is 14.3 ft and the crest of the concrete spillway is approximately 2.3 ft below the top of the concrete core wall; the dam has a weir length of 23.2 ft. The concrete apron extends approximately 16.8 ft downstream of the base of the spillway. A visual inspection completed in 2016 found the dam in poor condition. The left training wall was cracking and had slipped off the foundation. There was also significant erosion of the earthen embankment adjacent to the wall. The wooden bridge crossing the dam is partially collapsed and has been cordoned off by the Nature Conservancy. Identified deficiencies with the dam include inability of the dam to safely pass the Spillway Design Flood (SDF) without overtopping the embankments; failure of embankment walls; debris within the spillway approach and discharge areas; and deterioration of portions of the pedestrian bridge.

The dam blocks the natural movement of fish and other aquatic life and prevents the natural movement of sediment. Removal of the dam will restore the natural ecological functions of the waterway and restore water temperatures, dissolved oxygen levels and natural sediments. The project also removes the potential safety hazard that the dam and bridge present. DER selected the Becker Pond Dam Removal as a designated Priority Project in 2018 and worked with the Nature Conservancy to develop a restoration approach for this site that will restore fish passage and wildlife habitat. This site is also part of a University of Massachusetts (UMass) research project that proposes to address the knowledge gap surrounding water quality changes following dam removal. The UMass research project will monitor and take measurements of the water quality (temperature and dissolved oxygen), aquatic macro-invertebrates, and fish assessments. These measurements will be taken by UMass before and after the dam removal and will be published as part of a student thesis/dissertation and in journal articles.

Specifically, the project will include removal of the full vertical and lateral extent of the dam and restoration of the adjacent side slopes and channel in the footprint of the dam. The Preferred Alternative was revised during the MEPA review period to also include mechanical removal of a portion of the 550 cubic yards (cy) of impounded sediment that has been determined to be the readily mobile portion in order to create a pilot channel to facilitate channel formation. The excavated sediment would be reused for shaping and grading on site. Any sediment that cannot be reused on-site will be disposed of at an off-site landfill. The benefit of this alternative would be reduced potential for temporary sediment impacts to downstream receiving areas. Sediment that could not be re-used on site would need to be dewatered and hauled to a landfill. [2]

As noted in the EENF, there is an existing access road extending from East Street to the dam site. Although the majority of this access road is on land controlled by the Nature Conservancy, the stretch closest to East Street is held by a private landowner and the owner has not allowed access across the property. In order to provide construction access to the site, the Nature Conservancy has proposed construction of a temporary access road from East Street to bypass the property. This temporary access road would be located entirely within the Nature Conservancy's property and connect directly to East Street to the existing dirt road located on the Nature Conservancy's property. Impacts from this access road construction will include removal of trees from a mature forest. The Nature Conservancy proposes

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[2] See supplemental information related to the alternative analysis and site access provided on behalf of the Nature Conservancy on July 2, 2020.

revegetation of this temporary access road with non-mature trees following construction and utilization as a permanent hiking trail.

Project Site

Becker Pond covers an area of approximately 0.65 acres. Becker Pond Dam is located on an unnamed brook near Mount Washington State Forest in the southwestern corner of Massachusetts. The dam is a run-of-river dam, does not provide any flood storage and is not under jurisdiction of the Massachusetts Office of Dam Safety. The historical ecological function of the associated unnamed brook is a Coldwater Fishery Resource and falls within the Schenob Brook Area of Critical Environmental Concern (ACEC). Downstream of the site, the brook flows through Sages Ravine and drains to Schenob Brook, a tributary to the Housatonic River. The dam and surrounding property are part of the 800-acre Mount Plantain Preserve, owned by the Nature Conservancy, and are accessible via an unpaved road through private property off of East Street in Mount Washington. The Nature Conservancy's property is used by the public for hunting, fishing, and other recreation. The Nature Conservancy recently constructed a footbridge upstream of the impoundment to connect the original and new Hallig Trails on either side of the brook. The next bridge over the brook (Undermountain Road, Salisbury, Connecticut) is approximately two miles downstream.

Downstream of Becker Pond Dam, the brook flows over steep terrain within a narrow forested valley. The channel is approximately 12 to 15 ft wide with a 1 to 1.5-foot bankfull depth. Frequent, but irregularly spaced constrictions, created by bedrock, narrow the channel to approximately 8 ft in some locations. The channel exhibits substantial complexity in substrate, form, and habitat. Plunge pools are located below these drops. Pools are also located downstream of riffles and on the outside of bends where the channel is eroding along the valley edge.

Upstream of the impoundment, a small stone wall crosses the channel and marks the approximate upstream limit of influence of the dam. The new footbridge, constructed by the Nature Conservancy, is located approximately 50 ft upstream of this stone wall. Upstream of the bridge, for a distance of approximately 100 feet, the channel is steep with boulders and cobbles. Upstream of the steep boulder/cobble area, the channel becomes a lower gradient wetland channel with extensive deciduous wooded swamp wetlands influenced by beaver activity.

Wetland resource areas present in the vicinity of the dam include Bank, Land Under Water (LUW), Riverfront Area (RFA), Bordering Vegetated Wetlands (BVW), and Bordering Land Subject to Flooding (BLSF). Portions of the project site are mapped *Estimated or Priority Habitat of Rare Species* according to the 14th edition of the Massachusetts Natural Heritage Atlas.

Environmental Impacts and Mitigation

As described in the EENF, potential environmental impacts include permanent alteration of 0.98 acres of land and alteration of the following wetland resource areas: Bank (50 linear feet (lf)), LUW (34,600 sf), BLSF (20,100 sf), and RA (251,600 lf). The project includes dredging of approximately 550 cy of sediment.

Measures to avoid, minimize, and mitigate impacts include: use of erosion control best management practices (BMPs) and implementation of a construction-period management plan. Erosion and sedimentation controls will be installed to prevent sediment migration to resource areas.

Jurisdiction and Permits

This project is subject to MEPA review and a mandatory EIR pursuant to 301 CMR 11.03(3)(a)(4) because it requires Agency Actions and will result in the structural alteration of an existing dam that causes a decrease in impoundment capacity. The also exceeds several ENF thresholds at 301 CMR 11.03(3)(b)(1)(f) and 301 CMR 11.03(11)(b) because it will alter one half or more acres of any other wetlands and is located within a designated ACEC (respectively). The project requires a Section 401 Water Quality Certification (WQC) and a Chapter 91 (c.91) Permit from the Massachusetts Department of Environmental Protection (MassDEP). The project is receiving funding from the Division of Ecological Restoration (DER).

The project requires an Order of Conditions from the Mt. Washington Conservation Commission (or in the case of an appeal, a Superseding Order of Conditions from MassDEP). It also requires authorization from the U.S. Army Corps of Engineers (ACOE) under the General Permits for Massachusetts in accordance with Section 404 of the Clean Water Act (CWA).

The project is receiving State Financial Assistance from the Commonwealth, through DER. Therefore, MEPA jurisdiction for the project is broad and extends to all aspects of the project that are likely, directly or indirectly, to cause Damage to the Environment as defined in the MEPA regulations.

Waiver Request

In accordance with Section 11.05(7) of the MEPA regulations, the Nature Conservancy submitted an EENF with a request that I provide a Waiver of the Mandatory EIR requirement, or if the Waiver is not granted (301 CMR 11.11), allow a Single EIR to be prepared in lieu of the usual two-stage Draft and Final EIR process pursuant to Section 11.06(8) of the MEPA regulations. The EENF was subject to an extended public comment period pursuant to Section 11.06(1) of the MEPA regulations. The EENF included a discussion of project consistency with the waiver criteria outlined at 310 CMR 11.11.

As part of the MEPA review process for the proposed project, a virtual MEPA site visit was held on June 22, 2020. Issues related to sediment management and site access were raised during the MEPA site visit. The Nature Conservancy submitted supplemental information on July 2, 2020 to address these issues. The supplemental information provided an expanded alternatives analysis, including selection of a new Preferred Alternative, beyond what was submitted with the project EENF and also provided more information about site access.

Single EIR Request

In accordance with Section 11.05(7) of the MEPA regulations, the Proponent requested that in the case a waiver was not granted, I allow the Proponent to fulfill its EIR obligations under MEPA with a Single EIR, in-lieu of a Draft and Final EIR. According to 301 CMR 11.06(8), I may allow a Single EIR provided that the EENF:

- Describes and analyzes all aspects of the project and all feasible alternatives, regardless of any jurisdictional or other limitation that may apply to the Scope;
- Provides a detailed baseline in relation to which potential environmental impacts and mitigation measures can be assessed; and
- Demonstrates that the planning and design of the project use all feasible measures to avoid potential environmental impacts.

Review of the EENF

The EENF provided a description of existing and proposed conditions, preliminary project plans, results of hydrologic and hydraulic (H&H) modeling, sediment analysis results and an alternatives analysis, and identified measures to avoid, minimize and mitigate environmental impacts. The EENF notes that the Nature Conservancy has been working in partnership with State Agencies and stakeholder groups including DER and MassDEP. The EENF originally proposed a Preferred Alternative of a Full Dam Removal with Passive Downstream Release of Impounded Sediment Alternative. As noted above, supplemental information provided on July 2, 2020 selected a new Preferred Alternative which includes the Full Dam Removal with a Partial Impounded Sediment Removal of 550 cy Alternative.

I received a number comment letters, including from project partners, that were supportive of the project and the Nature Conservancy's request for an EIR Waiver because of the project's positive ecological impacts including improved water quality, restoration of natural sediment and nutrient transport regimes, improvement to aquatic habitat, aquatic species passage, creation of wetlands, and increased floodplain connectivity. I also received a number of comment letters, including from the Town of Mt. Washington Select Board and the Berkshire Regional Planning Commission (BRPC), requesting further MEPA review to address deficiencies that remain within the alternatives analysis, the assessment of the potential environmental impacts and environmental mitigation measures.

Alternatives Analysis

The Nature Conservancy considered four alternatives: the No Action Alternative; Full Dam Removal with Passive Downstream Release of Impounded Sediment Alternative; Full Dam Removal with Full Impounded Sediment Removal Alternative; and the Full Dam Removal with Partial Impounded Sediment Removal Alternative (the new Preferred Alternative). Alternatives were evaluated based on consistency with project goals, feasibility, cost, and impacts to environmental resources. Alternatives include the following:

1. Alternative 1: No-Action Alternative

The No-Action alternative would eliminate the cost of dam removal and stream restoration. This alternative would preserve the shallow impoundment environment which would continue to fill in with sediment over time. However, this No-Action alternative would continue to pose a safety risk due to the structural deficiencies of the dam. This alternative would also continue the long history of passage constraints for aquatic organisms and continued deposition of sediment and organic material within the impoundment. Dam removal, stream restoration, and reduction in safety hazards are the primary goals of this proposed project; the No-Action alternative would not serve the project purpose and was dismissed.

2. Alternative 2: Full Dam Removal with Passive Downstream Release of Impounded Sediment Alternative

This alternative includes the removal of the full vertical and lateral extent of the dam and restoration of the adjacent side slopes and channel in the footprint of the dam. With this alternative, approximately 550 cubic yards of impounded sediment would be passively released downstream following dam removal. This sediment would supplement sediment-starved reaches of the stream and Schenob Brook, with finer-grained materials being mobilized well downstream. The concrete from the dam would be removed to an off-site facility to be recycled, and disturbed valley slopes would be stabilized with biodegradable fabric. This alternative has the lowest associated implementation cost. However, it would result in higher risk of sedimentation within Sages Ravine. Material stored within the impoundment and mobilized following dam removal would be dispersed by the brook downstream of the dam. The primary impacts of sediment pulses are likely to include filling of pools, fining of the channel bed, and burial of other habitat features and/or aquatic species that cannot quickly mobilize and adapt to rapidly changing conditions. Most deposition is likely to be temporary; however, permanent deposition of a portion of the mobilized sediment may occur in secondary channels and low-lying floodplain areas. As such, it has been removed from consideration as the preferred alternative as indicated previously.

3. Alternative 3: Full Dam Removal with Full Impounded Sediment Removal Alternative

This alternative would include dam removal as in Alternative 2, but would also include mechanical removal of the total 1,500 cy of impounded sediment and disposal in a landfill. The purpose of complete sediment removal would be to minimize potential impacts to downstream receiving areas such as Sages Ravine. Although this is a technically feasible option and would lower the risk of sedimentation downstream, this alternative would require extensive water control to re-route the stream during construction and then excavate and remove the sediment. In order to be safely transported, the sediment dewatering would require an extensive cleared and level space, thus increasing the area of impact in the Riverfront Area. The sediment would then need to be transferred to dump trucks and hauled to a landfill. Finally, this alternative would also involve extensive seeding and revegetation of the former impoundment area with associated monitoring and maintenance costs.

4. Alternative 4 (*Preferred Alternative*): Full Dam Removal with Partial Impounded Sediment Removal Alternative

This alternative would provide the same level of dam removal as Alternatives 2 and 3 and would include mechanical removal of a portion of the 550 cy of impounded sediment that has been determined to be the readily mobile portion in order to create a pilot channel through the impoundment to facilitate channel formation. The excavated impounded sediment would be disposed of at an off-site landfill or (preferably) reused for shaping and grading on site. The benefit of this alternative would be reduced potential for sediment impacts to downstream receiving areas relative to Alternative 2 because 550 cy would be mechanically removed and thus not flow downstream. As with Alternative 3, extensive water control would be required to re-route the stream during construction and then excavate and haul out the sediment. The limits of disturbance would be greater than the footprint of the excavated channel (although not quantified in the supplemental material). However, the Preferred Alternative would require a smaller area of active revegetation as compared to Alternative 3. The Preferred Alternative would provide a reduced potential for sediment impacts to Sages Ravine while avoiding the cost of complete sediment removal (Alternative 3) and providing similar ecological benefit to Alternative 2. As such, this has been selected as the Preferred Alternative.

Wetlands and Waterways

The Mt. Washington Conservation Commission will review the project to determine its consistency with the limited project provisions of the Wetlands Protection Act (WPA), the Wetlands Regulations (310 CMR 10.00), and associated performance standards, including stormwater management standards (SMS). MassDEP will review the project to determine its consistency with the 401 WQC regulations (314 CMR 9.00). The Preferred Alternative as proposed includes removal of a portion of sediment in the impoundment and stabilization of certain sediments in place. While incidental movement of some sediment downstream is expected, the Preferred Alternative calls for construction of a pilot channel in the impoundment through removal of approximately 550 cy of sediment in an effort to prevent the majority of sediment within the impoundment from being mobilized and discharged to the receiving water. The Preferred Alternative will have a monitoring plan to ensure that this approach works as anticipated. I refer the Proponent to comments from MassDEP which identify issues with the wetland delineation, quantification of impacts, and identify discrepancies with wetland resource areas identified on the plans. Additional information to address this issue is required in the Single EIR.

The EENF includes a sediment characterization study within the Becker Pond Dam impoundment in accordance with 401 WQC regulations. The material sampled was composed of sand, silt, and clay with a median grain size for all samples in the medium sand range. The analyses showed a reduction in median grain size and increase in fines (silt and clay) content in the downstream direction from approximately 19% fines in the upstream sample to 39% fines in the downstream sample. The EENF estimated the total volume of impounded sediment is approximately 1,500 cy. The watershed has had very little development or agriculture, and the EENF concludes that there is low potential for the impounded sediment to contain oil or other hazardous materials. In addition, chemical testing results show that concentrations of the majority of the pollutants tested were below detection levels.

Based on the results of sediment sampling, the EENF proposes to dispose of the dredged material on-site in accordance with MassDEP policy, as applicable. The dredged spoils shall be managed and disposed in accordance with conditions of a 401 WQC as detailed in the *MassDEP Interim Policy COMM 94-007 Sampling, Analysis, Handling & Tracking Requirements for Dredged Sediment Reused or Disposed at Massachusetts Permitted Landfills*.

Wildlife and Ecological Resources

Becker Pond Dam is a run-of-river dam, does not provide any flood storage and is not under jurisdiction of the Massachusetts Office of Dam Safety. The historical ecological function of the associated unnamed brook is a Coldwater Fishery Resource and falls within the Schenob Brook ACEC. The Schenob Brook ACEC, with its associated wetlands, comprises one of the largest continuous calcareous seepage swamp in Massachusetts and contains one of the largest examples of calcareous fens in southern New England. Coldwater Fishery Resource habitats are a declining resource in Massachusetts due to climate change and other anthropogenic impacts. There are no other impoundments or current dams along unnamed brook downstream of Becker Pond Dam. As stated in the EENF, temperature data collected showed temperatures above the known thresholds for trout in Becker's Pond. Fish community sampling by UMass found exclusively warm-water tolerant species in the pond, while sampling upstream and at locations downstream of the dam showed an increasing proportion of coldwater-dependent species (such as trout) as the distance from the pond increased. According to the EENF, the Becker's Pond contains higher temperatures of water than the free-flowing areas of unnamed brook downstream of the dam. According to the EENF, the project will improve the ecological function of the brook and improve community resiliency by eliminating the risk of dam failure and need for maintenance; restoring the unnamed brook's natural channel, water temperatures, dissolved oxygen levels; and restoring natural sediment transport pathways downstream of the dam.

Climate Change Adaptation and Resiliency

The effects of climate change, including increased frequency and intensity of precipitation events, underscore the importance of proactively managing dam infrastructure. The EENF included the results of the hydraulic/hydrologic analysis which was used to design the project and to gauge its potential downstream impacts. The hydraulic analysis and the hydrologic modeling were conducted in order to model to estimate water surface profiles under various flow conditions and channel/breach configurations.

According to the EENF, under existing conditions the Becker's Pond Dam cannot adequately pass the 100-year, 24-hour storm event and includes flow overtopping the dam. Under proposed conditions, the restored channel will, at minimum, pass the 100-year flood and during storms with higher flows the former pond will act as a flood storage area. The EENF did not address how the effects of climate change may impact storm frequency or intensity. However, the dam is in poor condition and failure is expected. A visual inspection carried out in 2016 found with several critical issues with the dam, notably, the left training wall, which is cracked and failing, has slipped off its foundation. The EENF also notes that the inspection found significant erosion of the earthen embankment adjacent to the wall and cracked and spalling concrete in other areas. The wooden bridge crossing the dam has partially collapsed and has been cordoned off and warning signs posted. As indicated in the EENF, the project is intended to provide immediate benefits by reducing the potential risks to public safety and the environment associated with dam failure.

Greenhouse Gas Emission (GHG)

This project is subject to review under the May 2010 MEPA Greenhouse Gas Emission (GHG) Policy and Protocol ("the Policy) because it exceeds thresholds for a mandatory EIR. The GHG Policy includes a de minimus exemption for projects that are expected to produce minimal GHG emissions. As rehabilitation of an existing dam, GHG emissions will be limited to the construction period of the project, and are anticipated to be small. As such, this project falls under the GHG Policy's de minimus exemption and the Nature Conservancy was not required to submit a GHG analysis in conjunction with the EENF. The Nature Conservancy will reduce construction-period emissions through the use of ultra-low sulfur diesel fuel (ULSD) and anti-idling requirements.

Construction Period

Construction activities described in the EENF include the demolition and removal of the existing dam, construction of the stream channel, and dredging activities. The dam removal will include removing the full vertical and lateral extent of the concrete core wall and removing other concrete components including the apron and the spillway. The concrete material will be removed from the channel (to a staging area), broken into pieces, and removed to an approved facility. According to the EENF, the area of the stream impacted by construction activities will be restored to pre-construction conditions or better at the conclusion of the project. These restoration activities will include the placement of a series of specially-formulated seed mixes containing native wetland and upland species.

All construction and demolition activities should be managed in accordance with applicable MassDEP's regulations regarding Air Pollution Control (310 CMR 7.01, 7.09-7.10), and Solid Waste Facilities (310 CMR 16.00 and 310 CMR 19.00, including the waste ban provision at 310 CMR 19.017). The project should include measures to reduce construction period impacts (e.g., noise, dust, odor, solid waste management) and emissions of air pollutants from equipment, including anti-idling measures in accordance with the Air Quality regulations (310 CMR 7.11).

The Nature Conservancy will select project contractors that have installed retrofit emissions control devices to reduce emissions of volatile organic compounds (VOCs), carbon monoxide (CO) and particulate matter (PM) from diesel-powered equipment. Off-road vehicles are required to use ULSD. The Nature Conservancy is advised that if oil and/or hazardous material are identified during the implementation of this project, notification pursuant to the Massachusetts Contingency Plan (MCP, 310 CMR 40.0000) must be made to MassDEP.

The EENF indicates the site does not contain any structures listed in the State Register of Historic Places. The Massachusetts Board of Underwater Archaeological Resources (BUAR) notes that if any submerged cultural/archaeological resources are encountered during the course of the project, the Nature Conservancy should take steps to limit adverse impacts to resources and notify BUAR immediately.

Conclusion

Based on consultation with State Agencies and review of comment letters, I am declining the request to waive the EIR process in its entirety, but will allow the Proponent to file a Single EIR in accordance with the limited Scope below. The primary emphasis of this Scope is to establish baseline environmental conditions and resource areas; assess potential environmental impacts; provide additional description and analysis of other potential alternatives to the project and to provide additional information necessary to support selection of the Preferred Alternative.

SCOPE

General

The Single EIR should follow Section 11.07 of the MEPA regulations for outline and content, as modified by this Scope. It should respond to comments received on the EENF. The Single EIR should include a detailed description of the proposed project and describe any changes to the project since the filing of the EENF. The Single EIR should include updated plans to reflect any modifications to the project design. The Single EIR should identify and commit to specific environmental mitigation measures and provide draft Section 61 Findings. The Single EIR should include a list of required State Agency Permits, Financial Assistance, or other State approvals, as well as any local or federal permitting. If necessary, it should provide an updated description and analysis of applicable statutory and regulatory standards and requirements, and a description of how the project will meet those standards. It should provide a detailed description of construction procedures for all phases.

The Preferred Alternative was selected during the course of MEPA review without adequate identification of impacts or a full opportunity for public comment and input. The Single EIR should include additional description and analysis of the Preferred Alternative including a more precise delineation of impacted environmental resource areas, the potential ecological benefits of dam removal including for species habitat, any associated site plans for the Preferred Alternative and permitting requirements, and a description of how recreational opportunities will be maintained through the Preferred Alternative.

According to supplemental materials provided, under the Preferred Alternative "the limits of disturbance would be substantially greater than the footprint of the excavated channel." The Single EIR should provide additional information with respect to the limits of disturbance, environmental impacts and all proposed mitigation measures. In addition, according to the supplemental materials, the final details of the on-site placement of some of the 550 cy of dredged material will take placein upland areas. Portions of the project site are mapped *Estimated or Priority Habitat of Rare Species* according to the 14th edition of the Massachusetts Natural Heritage Atlas. Therefore, any placement of dredged sediment should be discussed with Natural Heritage and Endangered Species Program (NHESP). The Single EIR should provide updates on this discussion with NHESP, and an identification of anticipated impacts to rare species if any.

Alternatives Analysis

The Nature Conservancy considered four alternatives in the EENF: the No Action Alternative; Full Dam Removal with Passive Downstream Release of Impounded Sediment Alternative; Full Dam Removal with Full Impounded Sediment Removal Alternative; and the Full Dam Removal with Partial Impounded Sediment Removal Alternative (the Preferred Alternative). I acknowledge the comments received from several sources indicating that a fifth alternative was not included, which involves leaving the dam intact in order to preserve the current recreational uses of the dam while conducting repairs to eliminate the safety issues posed by the condition of the dam. The Single EIR should analyze this fifth alternative, in the same manner the other four alternatives were considered and include an evaluation of this fifth alternative based on consistency with project goals, feasibility, cost, and impacts to environmental resources. The Single EIR should evaluate how other alternatives will continue recreational opportunities, as compared to the fifth alternative described above. The Single EIR should provide any additional analysis of alternatives necessary to support selection of the Preferred Alternative as the alternative that the Proponent asserts will avoid, minimize, and mitigate Damage to the Environment to the maximum extent practicable. The Single EIR should include a description of how the Preferred Alternative compares relative to the dismissed alternatives and describe the differences in impacts to habitat, wetland impacts, sediment transfer within the limit of work and downstream. The Single EIR should include a detailed description of alternative construction methodologies that can reduce project impacts.

Wetlands/Waterways

The Single EIR should clarify the potential extent of permanent impact and temporary wetland alteration for the Preferred Alternative and include a narrative that addresses the projects consistency with the Wetland Protection Act (WPA), its implementing regulations (310 CMR 10.00) and associated performance standards; and demonstrates compliance with 401 WQC standards. The Proponent should review and include provisions for bank stabilization along the proposed pilot channel and adhere to the principles, methods, and techniques of the Natural Resources Conservation Service (NRCS) Stream Restoration Design Handbook, National Engineering Handbook Part 654 (Released September 20, 2007).

The Single EIR should include narrative and supporting data or graphics as necessary to demonstrate that the project can meet all applicable performance standards and regulations. The Single EIR should also provide a narrative and plans which clearly identify work activities. Not all wetland resource areas delineations are apparent or easy to read on the site plans provided in the EENF. All resource areas must be clearly shown on site plans and resource area alterations quantified on the site plans submitted in the Single EIR. I refer the Nature Conservancy to MassDEP comments for additional guidance on this issue.

The Nature Conservancy should continue to consider alternative construction timing or sequencing that would minimize or mitigate impacts to wetland resource areas and include any updates in the Single EIR. It should provide a monitoring and mitigation Plan for wetland resource areas, including BVW and LUW. The plan should identify the duration of the monitoring program, methods for assessing wetlands impacts including the effectiveness of creating the proposed pilot channel to minimize sediment transfer downstream, measures for identifying and managing invasive species, and potential mitigation measures in the event proposed design is shown to be less effective than anticipated.

Climate Change and Resiliency

Governor Baker issued Executive Order 569: Establishing an Integrated Climate Change Strategy for the Commonwealth (EO 569) on September 16, 2016. EO 569 recognizes the serious threat presented by climate change and directs Executive Branch agencies to develop and implement an integrated strategy that leverages state resources to combat climate change and prepare for its impacts. Requirements to analyze the effects of climate change through EIR review is an important part of this statewide strategy. The Single EIR should discuss potential effects of climate change, including increased frequency and intensity of precipitation events and extreme heat events, on the project design in the context of improving reliability and resiliency of the project or surrounding communities. It should address potential impacts associated with changes in flow rates, velocity and water depth, and changes in flood attenuation capacity, including any potential for downstream flooding or exacerbation of downstream conditions that may result from the removal of the dam.

Construction Period

The Single EIR should identify how the Nature Conservancy will avoid and minimize clearing of trees and other vegetation in the construction of the temporary access road. The Single EIR should describe the techniques that will be used for revegetation of this temporary access road following construction and how this area will be utilized as a permanent hiking trail. The Single EIR should describe changes to construction methodology based on refinements of the Preferred Alternative. The Single EIR should also include information about whether the hauling of construction material via East Street is anticipated to cause any damage to this Town maintained road, and if so, describe potential mitigation measures.

The Single EIR should provide an update on construction planning, including a description of how the project will comply with MassDEP Solid Waste and Air Pollution Control regulations and the erosion and sedimentation controls that will be implemented throughout the project site to reduce potential impacts to wetland resource areas. The Single EIR should describe any other construction period BMPs that will be employed other than those already disclosed.

Mitigation and Draft Section 61 Findings

The Single EIR should provide a separate chapter summarizing proposed mitigation measures including draft Section 61 Findings for each anticipated State Agency Action. The Single EIR should contain clear commitments to implement these mitigation measures, estimate the individual costs of each proposed measure, identify the parties responsible for implementation, and include a schedule for implementation.

Response to Comments

The Single EIR should contain a copy of this Certificate and a copy of each comment letter received. To ensure that the issues raised by commenters are addressed, the Single EIR should include direct responses to comments to the extent that they are within MEPA jurisdiction. This directive is not intended to, and shall not be construed to enlarge the scope of the Single EIR beyond what has been expressly identified in this Certificate. I recommend that the Nature Conservancy use either an indexed response to comments format, or a direct narrative response.

Circulation

The Proponent should circulate the Single EIR to those parties who commented on the EENF, to any State and municipal agencies from which the Proponent will seek permits or approvals, and to any parties specified in section 11.16 of the MEPA regulations. The Proponent may circulate copies of the Single EIR to commenters in a digital format (e.g., CD-ROM, USB drive) or post to an online website. However, the Proponent should make available a reasonable number of hard copies to accommodate those without convenient access to a computer to be distributed upon request on a first-come, first-served basis. The Proponent should send correspondence accompanying the digital copy or identifying the web address of the online version of the Single EIR indicating that hard copies are available upon request, noting relevant comment deadlines, and appropriate addresses for submission of comments. The Single EIR submitted to the MEPA office should include a digital copy of the complete document. A copy of the Single EIR should be made available for review in the Mount Washington Public Library.[3]

K. Theoharides

July 31, 2020
Date

Kathleen A. Theoharides

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[3] Requirements for hard copy distribution or mailings will be suspended during the Commonwealth's COVID-19 response. Please consult the MEPA website for further details on interim procedures during this emergency period: https://www.mass.gov/orgs/massachusetts-environmental-policy-act-office.

Comments received:

06/24/2020	Trout Unlimited - Taconic Chapter
06/29/2020	Town of Mount Washington Select Board
06/30/2020	Division of Ecological Restoration
07/01/2020	Eleanor Dawson
07/01/2020	Ted Dombrowski
07/20/2020	Massachusetts Department of Environmental Protection (MassDEP) Western Regional Office (WERO)
07/20/2020	Berkshire Regional Planning Commission
07/24/2020	Board of Underwater Archaeological Resources (BUAR)
07/24/2020	Housatonic Valley Association
07/24/2020	American Rivers
07/24/2020	Appalachian Trail Conservancy

KAT/ACC/acc

MassDEP
Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection

Western Regional Office • 436 Dwight Street, Springfield MA 01103 • 413-784-1100

Charles D. Baker
Governor

Karyn E. Polito
Lieutenant Governor

Kathleen A. Theoharides
Secretary

Martin Suuberg
Commissioner

July 20, 2020

Kathleen A. Theoharides, Secretary
Executive Office of Energy & Environmental Affairs
Massachusetts Environmental Policy Act Office
Anne Canaday, EEA No. 16226
100 Cambridge Street, 9th Floor
Boston, MA 02114-2524

Re: Becker Pond Dam Removal Project
Mt. Washington EENF

Dear Secretary Theoharides,

The Massachusetts Department of Environmental Protection (MassDEP), Western Regional Office (WERO) appreciates the opportunity to comment on the Expanded Environmental Notification Form (EENF) submitted for the proposed Becker Pond Dam Removal Project in Mt. Washington, Massachusetts. The Proponent (The Nature Conservancy) seeks a Waiver of a Mandatory Environmental Impact Report. Supplemental project information was submitted on July 2, 2020. Becker Pond is approximately 0.65 acres and is not under the jurisdiction of the Office of Dam Safety (ODS). The dam and surrounding property are part of the 800-acre Mt. Plantain Preserve, owned by The Nature Conservancy. The dam is in poor condition with several critical safety and structural issues. A site meeting was held on June 22, 2020. The applicable MassDEP regulatory and permitting considerations regarding wetlands, air pollution, solid waste, hazardous waste and waste site cleanup are discussed.

I. Project Description

The Nature Conservancy, Proponent, is seeking to remove the Becker Pond Dam and restore an unnamed brook that joins Schenob Brook downstream of Sages Ravine. The dam is a 95-foot long earthen embankment with a concrete core wall. The structural height is 14.3 feet and the crest of the concrete spillway is approximately 2.3 feet below the top of the concrete core wall and has a weir length of 23.2 feet. The concrete apron extends approximately 16.8 feet downstream of the base of the spillway. A visual inspection completed in 2016 found the dam in poor condition. The left training wall was cracking and had slipped off the foundation. There was also significant erosion of the earthen embankment adjacent to the wall. The wooden bridge crossing the dam is partially collapsed and has been cordoned off by the The Nature Conservancy. The channel downstream of the dam is approximately 12-15 feet wide, narrowing to 8 feet wide in some areas, to 1 foot in depth.

The dam blocks the natural movement of fish and other aquatic life and prevents the natural movement of sediment. Removal of the dam will restore the normal ecological functions of the waterway and restore water temperatures, dissolved oxygen levels and natural sediments. The project also removes the potential safety hazard that the dam and bridge present.

Some of the estimated 550 cubic yards of pond sediments will likely be removed mechanically to provide a reduced potential for sediment impacts to Sages Ravine Brook and to create a channel through the impoundment to facilitate channel formation. The excavated sediment would be disposed of off-site or reused for shaping and grading on site. The area of land under water to be converted to Bordering Vegetated Wetland is approximately 34,600 square feet.

Environmental impacts associated with this project include:

- 0.98 total acres of existing land
- -20,100 SF Bordering land Subject to Flooding
- -34,600 SF of new other wetland alteration (Land Under Water)
- + 50 LF Bank
- +251,600 FF Riverfront area

II. Required Mass DEP Permits and/or Applicable Regulations

Wetlands
310 CMR 10.00
Water Quality Certificate
314 CMR 9.00
Air Pollution
310 CMR 7.00
Solid Waste
310 CMR 16.00
Hazardous Waste
310 CMR 30.00
Bureau of Waste Site Cleanup
310 CMR 40.000

III. Permit Discussion

Bureau of Water Resource

401 Water Quality Certificate

As proposed, this project will require a Clean Water Act Section 401 Water Quality Certification (WQC) for dredging. The project as proposed includes removal of a subset of sediments in the impoundment and stabilizing of certain sediments in place. Incidental sluicing of some sediments downstream is expected, though the preferred alternative calls for construction of a pilot channel in the impoundment through removal of approximately 550 cubic yards of sediments in an effort to prevent the majority of sediments within the impoundment from being mobilized and discharged to the receiving water. The Proponent should submit a copy of the application to both the Western Regional and the Boston Office of MassDEP for review. One certificate will be issued following coordination between regional staff and the Boston office.

Based on the results of sediment sampling, the Proponent proposes to dispose of the dredged material on-site in accordance with MassDEP policy, as applicable. The dredged spoils shall be managed and disposed in accordance with conditions of a 401 Water Quality Certificate Permit as detailed in the *MassDEP Interim Policy COMM 94-007 Sampling, Analysis, Handling & Tracking Requirements for Dredged Sediment Reused or Disposed at Massachusetts Permitted Landfills.*

The Proponent should review and include provisions for bank stabilization along the proposed pilot channel and adhere to the principles, methods, and techniques of the Natural Resources Conservation Service (NRCS) Stream Restoration Design Handbook, National Engineering Handbook Part 654 (Released September 20, 2007). Specifically, proposed design should include techniques and methods described within the following references:

- *Technical Supplement 14I, Streambank Soil Engineering, Part 654 National Engineering Handbook;*
- T*echnical Supplement 14J, Use of Large Woody Material for Habitat and Bank Protection, Part 654 National Engineering Handbook.*

Wetlands and Waterways

The Site appears to contain Bank (Inland), Bordering Vegetated Wetland, Land Under Water Bodies and Waterways (LUWW), and Riverfront Area. The Proponent notes that there will be 20,100 sq. ft. of Bordering Land Subject to Flooding (BLSF) impacts, though there is evidently no FEMA-mapped floodplain in Mount Washington. This should be clarified.

The scope of the project requires that a Notice of Intent (NOI) be filed with the Mount Washington Conservation Commission. Prior to commencement of project construction, a final Order of Conditions (OOC) must be issued by the Commission.

Resource Area Delineation

MassDEP notes resource areas are partially depicted (i.e., Land Under Waterbodies and Waterways), though associated survey flag locations marking the top of Bank and the extent of any Bordering Vegetated Wetlands adjacent to Becker Pond (if existing) are not readily apparent on the site plans provided. Delineation data forms for vegetated wetlands are provided in the EENF, though no vegetated wetlands are depicted on the site plans, including the known wetland near the proposed construction entrance of East Street. All resource areas must be clearly shown on site plans and resource area alterations quantified on the site plans submitted for subsequent permitting.

Ecological Restoration Project Provisions

MassDEP recommends that the project be submitted as an Ecological Restoration Project, using WPA Form 3A, provided the project qualifies as such per the definition found at 310 CMR 10.04 and provided the project meets the *Additional Eligibility Criteria for Dam Removal Projects* outlined at 310 CMR 10.13(2).

Bureau of Air and Waste

Air Quality

Construction and Demolition Activities

The construction and demolition activity must conform to current Air Pollution Control Regulations. The proponent should implement measures to alleviate dust, noise, and odor nuisance conditions that may occur during the construction and demolition activities. Such measures must comply with the MassDEP's Bureau of Air and Waste (BAW) Regulations 310 CMR 7.01, 7.09, and 7.10.

Construction Equipment

MassDEP recommends that the project proponent participate in the MassDEP Diesel Retrofit Program. All non-road engines shall be operated using only ultra-low sulfur diesel (ULSD) with a sulfur content of 15 ppm pursuant to 40 CFR 80.510.

Solid Waste

The proponent shall properly manage and dispose of all solid waste generated by this proposed project pursuant to 310 CMR 16.00 and 310 CMR 19.000, including the regulations at 310 CMR 19.017 (waste ban). In addition, the proponent shall manage regulated asbestos and asbestos-containing waste material as special wastes in accordance with 310 CMR 19.061.

Asphalt, brick and concrete (ABC) generated through crushing and reuse on-site must be handled in accordance with regulation and policy. Otherwise, the proponent would need to obtain a site assignment and facility permit for the crushing activity and a Beneficial Use Determination (BUD) for the reuse of the crushed material. The BUD regulations at 310 CMR 19.060 establish levels of assessment for four categories of beneficial use. More information regarding the handling of ABC, and a copy of the 30-day notification form may be found at the following website:
http://www.mass.gov/eea/agencies/massdep/recycle/reduce/using-or-processing-asphalt-pavement-brick-and-concrete-.html.

Any discarded objects encountered during the demolition of the former dam shall be removed from the site for disposal as Solid Waste or recycling as appropriate.

Hazardous Waste

Any hazardous wastes generated by the demolition and earthwork activities or universal wastes must be properly managed in accordance with 310 CMR 30.0000.

If any hazardous waste, including waste oil, is generated at the site, the proponent must ensure that such generation is properly registered with the Department and managed in accordance with 310 CMR 30.00.

Bureau of Waste Site Cleanup

Spills Prevention

A spills contingency plan addressing prevention and management of potential releases of oil and/or hazardous materials from pre- and post-construction of the dam removal activities should be presented to workers at the site and enforced. The plan should include but not be limited to, refueling of machinery, storage of fuels, and potential releases.

IV. Other Comments/Guidance

MassDEP has adequate regulatory authority through the 401 WQC permitting process to determine the potential environmental impacts from the project and to ensure that all feasible measures are taken to avoid, minimize and mitigate any negative impacts as necessary. With respect to Greenhouse Gas (GHG) Emissions, MassDEP concurs that the long term GHG impacts from the construction stage of this project are De Minimis.

The MassDEP permitting process will ensure environmental impacts are avoided where possible and minimized where necessary. MassDEP staff is available for discussions as the project progresses. If you have any questions regarding this comment letter, please do not hesitate to contact Kathleen Fournier at (413) 755-2267.

Sincerely,

Michael Gorski
Regional Director

cc: MEPA File

The COMMONWEALTH OF MASSACHUSETTS
BOARD OF UNDERWATER ARCHAEOLOGICAL RESOURCES
EXECUTIVE OFFICE OF ENERGY AND ENVIRONMENTAL AFFAIRS
251 Causeway Street, Suite 800, Boston, MA 02114-2136
Tel. (617) 626-1014 Fax (617) 626-1240
www.mass.gov/orgs/board-of-underwater-archaeological-resources

July 24, 2020

Kathleen A. Theoharides, Secretary
Executive Office of Energy and Environmental Affairs
Attention: Anne Canaday, MEPA Unit
100 Cambridge Street, Suite 900
Boston, MA 02114

RE: Becker Pond Dam Removal (EOEA #16226), East Street, Mt. Washington, MA

Dear Secretary Theoharides,

The staff of the Massachusetts Board of Underwater Archaeological Resources has reviewed the above-referenced proposed project as detailed in the *Environmental Monitor* of 10 June 2020 and in the Expanded Environmental Notification Form (EENF) and Request for Waiver of Mandatory Environmental Impact Report–Supplemental Information document of 2 July 2020 and offers the following comments.

The Board has conducted a preliminary review of its files, the Massachusetts Historical Commission's Massachusetts Cultural Resources Inventory System (MACRIS), historic maps, and secondary literature sources to identify known and potential submerged cultural resources in the proposed project area. No record of any underwater archaeological resources was found. Based on the results of this review and the nature of the proposed project, the Board expects that this project is unlikely to impact submerged cultural resources.

Should heretofore unknown archaeological resources be encountered during the course of work, the Board expects that the project's sponsor will take steps to limit adverse effects (take care to not further disturb the archaeological resource and note its precise location) and notify the Board and the Massachusetts Historical Commission, as well as other appropriate agencies, immediately in accordance with the Board's *Policy Guidance for the Discovery of Unanticipated Archaeological Resources.*

The Board appreciates the opportunity to provide these comments as part of the MEPA review process. Should you have any questions regarding this letter, please do not hesitate to contact me at (617) 626-1014, or by email at david.s.robinson@mass.gov.

Sincerely,

David S. Robinson
Director

/dsr
Cc: Brona Simon, MHC
Bonney Hartley, S-MCBMI (via email attachment)
Bettina Washington, WTGH/A (via email attachment)
David Weeden, MWT (via email attachment)

Massachusetts Department of Fish and Game
Division of Ecological Restoration
Invested in Nature and Community

Beth Lambert, Director
Hunt Durey, Deputy Director

Charles D. Baker
Governor
Karyn E. Polito
Lieutenant Governor
Kathleen A. Theoharides
Secretary
Ronald S. Amidon
Commissioner
Mary-Lee King
Deputy Commissioner

June 30, 2020

Secretary Kathleen A. Theoharides
Executive Office of Energy and Environmental Affairs
Attention: MEPA Office
100 Cambridge Street, Suite 900
Boston, MA 02114

RE: EEA No. 16226 / Becker Pond Dam Removal Project

Dear Secretary Theoharides,

The MA Division of Ecological Restoration (DER) supports The Nature Conservancy's request for a waiver of the mandatory Environmental Impact Report (EIR) under 301 CMR 11.11(5) for the Becker Pond Dam Removal Project. DER agrees with the proponent that an EIR would result in undue hardship and that the project meets the EIR waiver requirements, including that an EIR would "not serve to avoid or minimize damage to the environment" and that "the project is likely to cause no damage to the environment".

DER selected the Becker Pond Dam Removal as a designated Priority Project in 2018. Since then, we have partnered with The Nature Conservancy to develop a restoration approach for this site that will restore fish passage and valuable wildlife habitat while removing a public safety hazard. The proposed actions will create a high-quality, self-sustaining riverine system that promotes resiliency within protected lands, including the Schenob Brook Area of Critical Environmental Concern. Removal of the dam will also eliminate the costs and liabilities associated with this relic, hazardous infrastructure.

The local, state, and federal permits required for this project will result in a thorough review by regulatory agencies and provide ample opportunity for additional public comment. We appreciate this opportunity to comment during the MEPA process. Please do not hesitate to contact me at (617) 626-1542 with any questions.

Sincerely,

Beth Lambert

Beth Lambert
Director

BRPC
Berkshire Regional Planning Commission

KYLE HANLON, Chair
JOHN DUVAL, Vice-Chair
SHEILA IRVIN, Clerk
MALCOLM FICK, Treasurer
THOMAS MATUSZKO, A.I.C.P.
Executive Director

July 20, 2020

Kathleen Theoharides, Secretary
Executive Office of Energy and Environmental Affairs
Attn: Anne Canaday
100 Cambridge Street, Suite 900
Boston, MA 02114

Re: Becker Pond Dam Removal EENF, EEA# 16226

Dear Secretary Theoharides:

The Berkshire Regional Planning Commission (BRPC) hereby submits comments on the Expanded ENF for the Becker Pond Dam Removal Project (EEA #16226) in the Town of Mount Washington. The proposed project has met or exceeded MEPA review thresholds for a Mandatory Environmental Impact Report (EIR) due to impacts to Wetlands, Waterways, and Tidelands and State-Listed Rare Species and meets MEPA review thresholds due to its location within a designated Area of Critical Environmental Concern (ACEC). The Nature Conservancy, the project proponent, has requested a full waiver from the EIR. BRPC respectfully requests that the waiver from the mandatory EIR not be granted and that a Single EIR be required, at a minimum.

The Schenob Brook Drainage Basin ACEC, with its associated wetlands, comprises one of the most significant natural communities in Massachusetts. The largest continuous calcareous seepage swamp and the finest examples of calcareous fens in southern New England are located here. Over 40 state-listed rare and endangered species are located in the ACEC. In addition to the requirements of an ENF, an Expanded ENF must include more extensive and detailed information that describes and analyzes a proposed project and its alternatives and assesses its potential environmental impacts and environmental mitigation measures. Despite the submission of supplemental material, the Expanded ENF for the Becker Pond Dam Removal does not include the level of extensive and detailed information that is warranted in order to grant a waiver of the mandatory EIR.

The Expanded ENF describes the proposed project, however there are weaknesses and deficiencies that remain within the alternatives analysis, the assessment of the potential environmental impacts and environmental mitigation measures. According to supplemental materials provided by the proponent, under the preferred alternative “the limits of disturbance would be substantially greater than the footprint of the excavated channel”, however it does not appear that any additional information has been provided with respect to the limits of disturbance, environmental impacts or proposed mitigation measures. According to the supplemental materials, the final details of the on-site placement in upland areas would need to be discussed with Natural Heritage and Endangered Species Program because the site and surrounding land is within a mapped Priority Habitat.

BRPC is concerned that site access has yet to be determined and the EENF is deficient in its assessment of environmental impacts that would result from the creation of an access road. The new preferred alternative includes off-site hauling of material that would cause substantial wear and tear on the access road and on East Street. However, the supplemental materials do not include additional information with respect to the wear and tear on the access road and East Street, environmental impacts or proposed mitigation measures. Lastly, a fifth alternative has not been included, which is leaving the dam intact and repairing the dam to eliminate the safety issues currently posed by the condition of the dam. For these reasons, BRPC respectfully requests that the waiver from the mandatory EIR not be granted and that a Single EIR be required, at a minimum.

The BRPC approved these comments at the July 16, 2020 meeting of the Commission.

Sincerely,

Thomas Matuszko, AICP
Executive Director

TOWN OF MOUNT WASHINGTON
2 Plantain Pond Road
Mount Washington, Massachusetts 01258
(413) 528-2839
townofmtwashington.com

June 29, 2020

Executive Office of Energy and Environmental Affairs (EEA)
Attn: MEPA Office
Anne Canaday, EEA No. 16226
100 Cambridge Street, Suite 900
Boston MA 02114

Re: Becker Pond Dam Removal Project (Mt. Washington) Expanded Environmental Notification Form (EENF) and Request for Waiver of Mandatory Environmental Impact Report (EIR)

Dear Ms. Canaday:

Based on the unanimous vote of the Select Board at the meeting of June 29, 2020, and public comments to the board, the Select Board of the Town of Mount Washington opposes the requested waiver of the Mandatory Environmental Impact Report for the Becker Pond Dam Removal Project.

The Town strongly supports a full environmental study performed on the entire area, including upstream wetlands, the Becker Pond impoundment area and its adjacent wetlands, and the downstream waterways into Sages Ravine and further into Connecticut, as well as their embankment areas.

It is our understanding that in order to perform the work the proponent will have to install and then remove a new access way. This too causes environmental concern. Please do not hesitate to contact the Town of Mount Washington Select Board for further clarification, if necessary.

Sincerely,

Jim Lovejoy, Chair - jimlovejoy@townofmtwashington.com
Gail Garrett - gailg@townofmtwashington.com
Brian Tobin - briantobin@townofmtwashington.com

Town of Mount Washington - Select Board

CC: Martin Suuberg, Commissioner, DEP, martin.suuberg@mass.gov
KathleenBaskin, Ass't Commissioner Bureau of Water Resources, kathleen.baskin@mass.gov
W. "Smitty" Pignatelli, Chair Joint Committee of Resources and Agriculture, rep.smitty@mahouse.gov
Melissa Provencher, BRPC, mprovencher@berkshireplanning.org
Lealdon Langley, Watershed Management, DEP, lealdon.langley@mass.gov
Laura Blake, Watershed Planning Program, DEP, laura.blake@mass.gov

American Rivers
RIVERS CONNECT US®

July 24, 2020

Secretary Kathleen Theoharides
Executive Office of Environmental Affairs
Attention: MEPA Office
100 Cambridge Street Suite 900
Boston, MA 02114

RE: **MEPA File #: 16226**

Becker Pond Dam Removal Project

Dear Secretary Theoharides:

American Rivers supports the request for a waiver of an Environmental Impact Report (EIR) under 301 CMR 11.11(5) for the Becker Pond Dam Removal Project in Mt. Washington, Berkshire County, Massachusetts. Based upon the scientific and engineering analysis included in the EENF, preparation of an EIR for this project would not serve to avoid or minimize damage to the environment, nor would its preparation provide increased benefit to the project or the environment.

American Rivers has worked on dam removals across Massachusetts and the country for the past two decades and time and again we see the benefits conveyed by stream restoration through dam removal. Impoundments formed by dams inundate river and stream habitat, converting it to slower moving and lake-like habitats, trapping sediment and nutrients. The water impounded behind the dam tends to be warmer, reducing dissolved oxygen and water quality. Dam removal reverses these impacts, restoring the natural sediment and nutrient transport regimes, improving water quality, and improving aquatic species passage within the river system.

The Becker Pond dam is a run-of-river dam and does not provide any flood storage, nor does it currently provide any recreational use. Its removal will eliminate a public safety hazard and restore the natural and historical ecological function of the associated brook, which is a MassWildlife-certified Coldwater Fishery Resource and falls within the Schenob Brook Area of Critical Environmental Concern.

Concerns regarding potential temporary impacts downstream following the dam removal are not uncommon. As noted, rivers are dynamic ecosystems. Increasingly as we study dam removals, we demonstrate that the upstream impacts recover quickly to a new habitat type; downstream impacts, for instance from sediment release, particularly on steep gradient systems such as this, also establish a new equilibrium. Some temporary impacts are not unlike what we see in rivers during and after large storm events.

The basis of this waiver request is founded upon the extensive data collection and analysis of environmental impacts that have been conducted in support of this project to date. These analyses support the overwhelming environmental benefit of the project, and have resulted in the development of strategies to minimize and avoid negative environmental impacts as discussed in the alternatives analysis. This project is also supported by experts from the Massachusetts Division of Ecological Restoration who have decades of restoration experience.

The permitting associated with this project will enable additional public and regulator input as well as a mechanism for application of conditions to ensure compliance with MEPA regulations. This project will require a number of environmental permits, including the 401 Water Quality Certificate (Department of Environmental Protection), Massachusetts Wetlands Protection Act Order of Conditions (Mt. Washington Conservation Commission), Section 106 Historical Certificate (Mass Historic and other signatories), and Section 404 dredge and fill Permit (U.S. Army Corps of Engineers).

The Becker Pond Dam Removal Project will have many environmental and community benefits. On behalf of the dam owner and its restoration partners, I urge you to favorably consider this waiver request. If you have any questions, please don't hesitate to contact me at 413-584-2183 or asingler@americanrivers.org.

Sincerely,

Amy Singler
Director, River Restoration

APPALACHIAN TRAIL
CONSERVANCY®

Karen Lombard
Director of Stewardship & Restoration
The Nature Conservancy
136 West St., Suite 202
Northampton, MA 01060
klombard@tnc.org

July 23, 2020

Dear Karen,

On behalf of the Appalachian Trail Conservancy (ATC) I am expressing our support for the Becker Pond Dam Removal Project on an unnamed brook in Mt. Washington, Berkshire County, Massachusetts by The Nature Conservancy (TNC). Removal of the decrepit dam will restore fish passage and wildlife habitat, while also removing a public safety hazard.

ATC is interested in this project as a conservation organization and co-managers of the adjacent public land around the Appalachian Trail near Sages Ravine, a highly popular Appalachian Trail destination with high natural resource and scenic value. We also support a restored natural stream flow into Sages Ravine.

We believe it is a best management practice to remove this dam, and that removal of the dam will restore the natural and historical ecological function of the associated brook, which is a MassWildlife-certified Coldwater Fishery Resource and falls within the Shenob Brook Area of Critical Environmental Concern. Dam removal generally has many environmental benefits, including improved water quality, restoration of natural sediment and nutrient transport regimes, improvement to aquatic habitat, aquatic species passage, creation of wetlands, and increased floodplain connectivity.

ATC supports TNC's due diligence regarding required environmental reviews, permits, and public comment opportunities. We request that ATC be notified of when the dam removal will occur so that we can inform Appalachian Trail visitors to the Sages Ravine area of this project. We would also like to offer monitoring of stream flow and sediment release at Sages Ravine and look forward to working with TNC on a monitoring program.

Please let me know if we can provide any additional support or information.

Hawk Metheny

Hawk Metheny
Senior Regional Director-Northeast
Appalachian Trail Conservancy
hmetheny@appalachiantrail.org

E. A. Dawson
6 Plantain Pond Road
Mount Washington, MA 01258

July 1, 2020

Executive Office of Energy and Environmental Affairs (EEA)
Attn: MEPA Office
Anne Canaday, EEA No. 16226
100 Cambridge Street, Suite 900
Boston MA 02114

Re: Becker Pond Dam Removal Project (Mt. Washington) Expanded Environmental Notification Form (EENF) and Request for Waiver of Mandatory Environmental Impact Report (EIR)

Dear Ms. Canaday:

I strongly support the Selectboard's unanimous vote to oppose a waiver for the Environmental Impact Review for the Becker Pond project.

As both a biologist by training and a municipal official, I find it particularly vexing that any organization "dedicated" to "responsible" environmental projects would request that they be allowed to alter the rules set for everyone else.

I have attached a copy of the Nature Conservancy's own mission statement and I would encourage you to read it in its entirety. I would also encourage you to become familiar with some of the TNC projects around the country that have changed wild areas into commercially viable properties. The extremely fragile barrier islands off the coast of South Carolina were taken over by the Nature Conservancy and now sport exceedingly popular golf courses. Not a win for the ecology there. In our own town we were lead to believe that in order to eradicate the evil barberry (invasive to be sure, but spread by birds and other wildlife and not controllable by herbicides) that the appropriate strategy was to use literally tons of Roundup to control the situation. Of course, we were assured that this was to be used carefully and had no lasting effect on the ecology. I submit that their position was not only misleading (the data regarding the dangers of this product were easily accessible) but irresponsible. The population of Mount Washington have excellent reasons to be skeptical of the Nature Conservancy's assurances.

Within this application is the fact that, to perform the proposed project, an access road will have to be built. There are no details regarding the scale, size or impact of this road or its remediation when the project is completed. This activity will require large equipment to be transported over a gravel road that belongs to the town with absolutely no consideration or reimbursement for the wear-and-tear on any of the town-owned roads. We have just spent over $12,000.00 for yet another engineering study to remediate the gravel roads. This amount just pays for the study, not any of the required work. The study was initiated over the concerns of the residents on exactly that same portion of the road that will be ground zero for this TNC project. Given extremely small number of properties existing in town and the fact that over 60% of those properties are owned by the Commonwealth and the Nature Conservancy (thereby not contributing to the town treasury – as our PILOT money has been cut yet again), the burden of maintain our infrastructure is not inconsiderable.

The population living along that part of the road will be subject to the noise, dust and inconvenience caused by the work being done. Anyone else owning property up here who would want to "remediate" an area under similar conditions would be paying a huge fee to complete the EIR required.

Clearly there have been strong concerns voiced regarding the value of the entire project. Impoundments changed the environment dramatically. But recognizing that Those concerns need to be addressed by the Nature Conservancy, not swept aside. Waiving requirements for the EIR will send exactly the wrong message.

I am also attaching an email sent out by a resident regarding Becker Pond. I have his permission to do so. It is important that all sides be heard.

Thank you.

Respectfully,

Eleanor Dawson

CC: Martin Suuberg, Commissioner, DEP, martin.suuberg@mass.gov
KathleenBaskin, Ass't Commissioner Bureau of Water Resources, kathleen.baskin@mass.gov
W. "Smitty" Pignatelli, Chair Joint Committee of Resources and Agriculture, rep.smitty@mahouse.gov
Melissa Provencher, BRPC, mprovencher@berkshireplanning.ort
Lealdon Langley, Watershed Management, DEP, lealdon.langley@mass.gov
Laura Blake, Watershed Planning Program, DEP, laura.blake@mass.gov

HVA
hvatoday.org

Housatonic Valley Association

150 Kent Road
PO Box 28
Cornwall Bridge, CT 06754
T: (860) 672-6678

Merwin House
14 Main Street
PO Box 496
Stockbridge, MA 01262
T: (413) 298-7024

37 Furnace Bank Road
PO Box 315
Wassaic, NY 12592
T: (845) 442-1039

ACCREDITED
LAND TRUST ACCREDITATION COMMISSION

July 24, 2020

Secretary Kathleen Theoharides
Executive Office of Environmental Affairs
Attention: MEPA Office
100 Cambridge Street Suite 900
Boston, MA 02114

RE: **MEPA File #: 16226**
Becker Pond Dam Removal Project

Dear Secretary Theoharides:

The Housatonic Valley Association, the watershed organization for the Housatonic River is providing this letter in support (submitted electronically) of the waiver request for an Environmental Impact Report (EIR) under 301 CMR 11.11(5) for the Becker Pond Dam Removal Project in Mt. Washington, Berkshire County, Massachusetts. Removal of the dam will restore fish passage and wildlife habitat, while also removing a public safety hazard. HVA has been working to improve aquatic connectivity in the Housatonic watershed for more than ten years. This project, led by The Nature Conservancy, is an important river restoration project in the Housatonic watershed.

As you know, the Secretary may waive an EIR if preparation of the EIR would result in “undue hardship” to the project proponent or would “not serve to avoid or minimize damage to the environment” as described under 301 CMR 11.11(1). Furthermore, we understand that when mandatory EIR review thresholds have been exceeded, the Secretary may grant a waiver of the EIR as described under 301 CMR 11.11(2) based on determination that preparation of an EIR would not provide increased benefit to the project and the environment. Based upon the scientific and engineering analysis included in the EENF, preparation of an EIR for this project would not serve to avoid or minimize damage to the environment, nor would its preparation provide increased benefit to the project and the environment for reasons listed below.

Determinations for an EIR Waiver are based on whether “the project is likely to cause no damage to the environment” and “ample and unconstrained infrastructure facilities exist to support the project” (301 CMR 11.11(3)). Dam removal projects like this one restore natural ecological function and maximize environmental benefit. The basis of this waiver request is founded upon the extensive data collection and analysis of environmental impacts that have been conducted in support of this project to date. These analyses support the overwhelming environmental benefit of the project, and have resulted in the development of strategies to minimize and avoid negative environmental impacts as discussed in the alternatives analysis. This project is also supported by experts from the Massachusetts Division of Ecological Restoration who have decades of restoration experience.

This project triggers mandatory EIR under 301 CMR 11.03(3)(a)4: *structural alteration of an existing dam that causes and expansion of 20% or any decrease in impoundment capacity*. The dam is a run-of-river dam and does not provide any flood storage, nor does it currently provide any recreational use. Removal of the dam will restore the natural and historical ecological function of the associated brook, which is a MassWildlife-certified Coldwater Fishery Resource and falls within the Schenob Brook Area of Critical Environmental Concern. Dam removal has many environmental benefits, including improved water quality, restoration of natural sediment and nutrient transport regimes, improvement to aquatic habitat, aquatic species passage, creation of wetlands, and increased floodplain connectivity.

The permitting associated with this project will enable additional public and regulator input as well as provide a mechanism for application of conditions to ensure compliance with various laws and regulations. This project will require a 401 Water Quality Certificate (Department of Environmental Protection), Massachusetts Wetlands

Protection Act Order of Conditions (Mt. Washington Conservation Commission), Section 106 Historical Certificate (Mass Historic and other signatories), and Section 404 dredge and fill permit (U.S. Army Corps of Engineers).

The Becker Pond Dam Removal Project will have many environmental and community benefits. On behalf of the dam owner and its restoration partners, I urge you to favorably consider this waiver request. If you have any questions, please don't hesitate to contact me, Alison Dixon at adixon@hvatoday.org.

Sincerely,

Alison Dixon
HVA - Berkshire Outreach Manager
14 Main Street
Stockbridge, MA 01262
adixon@hvatoday.org

I would like to give all concerned my input on the removal of the Becker pond dam by the Nature Conservancy. The Dam was built by William Hunt eighty years ago. The pond is spring fed and has many pools upstream harboring endangered species of amphibians and plant life. The pond itself is a breeding ground for native brook trout, newt salamanders which breed on the dam itself yearly. Also spotted salamanders, wood ducks, kingfishers, blue herons, variety of owls. The pond is located a good half of a mile off east street and was owned by the Dombrowski family for three generations , It was recently sold to the Nature Conservancy thinking it would be kept intact. The family held on to the house and a small parcel of land which also holds the access road to pond. In recent times we have granted the Nature Conservancy permission to walk this road to do studies and for their voluntary work crews etc. Last year their intent removing the dam was given and they were told they could not use the road for the removal of the dam. It now looks like they are intending on building a alternative road through Nature Conservancy property south of the existing road. Becker Pond is a thriving Ecosystem that should not be eliminated ,especially by the Nature Conservancy . If we had known that this was their intent we never would have sold this property to them . To all concerned residents ,please feel free to take a viewing of Becker Pond and experience something that will never be able to replaced. I am available to be contacted for more information Ted Dombrowski 413 528 8090

Henry Sweren
President – Taconic Chapter

June 24, 2020

Secretary Kathleen Theoharides
Executive Office of Environmental Affairs
Attention: MEPA Office
100 Cambridge Street Suite 900
Boston, MA 02114

RE: **MEPA File #: 16226**
Becker Pond Dam Removal Project

Dear Secretary Theoharides:

The Massachusetts/Rhode Island (MA/RI) Council of Trout Unlimited is comprised of 11 chapters of dedicated volunteer cold-water conservationists. Our membership numbers in the two states exceed 4,000 individuals. These good folks have in recent years, among other efforts, undertaken projects to conserve nearly 2 miles of wild brook trout habitat in Heath and Westport, Massachusetts; identify and track wild trout populations in the Deerfield River watershed; and, remove dams and restore coaster brook trout populations on Red Brook in southeastern Massachusetts. In short, we know a good cold-water conservation project when we see it!

I am the President of the Taconic Chapter, which works to protect and conserve cold-water resources in the most western reaches of Massachusetts. Our chapter strongly supports the request for a waiver of an Environmental Impact Report (EIR) under 301 CMR 11.11(5) for the Becker Pond Dam Removal Project in Mt. Washington, Berkshire County, Massachusetts. Removal of the dam will restore fish passage and wildlife habitat, while also removing a public safety hazard.

As you know, the Secretary may waive an EIR if preparation of the EIR would result in “undue hardship” to the project proponent or would “not serve to avoid or minimize damage to the environment” as described under 301 CMR 11.11(1). Furthermore, we understand that when mandatory EIR review thresholds have been exceeded, the Secretary may grant a waiver of the EIR as described under 301 CMR 11.11(2) based on determination that preparation of an EIR would not provide increased benefit to the project and the environment.

Based upon the scientific and engineering analysis included in the EENF, preparation of an EIR for this project would not serve to avoid or minimize damage to the environment, nor would its preparation provide increased benefit to the project and the environment for reasons listed below.

Determinations for an EIR Waiver are based on whether “the project is likely to cause no damage to the environment” and “ample and unconstrained infrastructure facilities exist to support the project” (301 CMR 11.11(3)). Dam removal projects like this one restore natural ecological function and maximize environmental benefit. The basis of this waiver request is founded upon the extensive data collection and analysis of environmental impacts that have been conducted in support of this project to date. These analyses support the overwhelming environmental benefit of the project and have resulted in the development of strategies to minimize and avoid negative environmental impacts as discussed in the alternatives analysis. This project is also supported by experts from the Massachusetts Division of Ecological Restoration who have decades of restoration experience.

This project triggers mandatory EIR under 301 CMR 11.03(3)(a)4: *structural alteration of an existing dam that causes an expansion of 20% or any decrease in impoundment capacity*. The dam is a run-of-river dam and does not provide any flood storage, nor does it currently provide any recreational use. Removal of the dam will restore the natural and historical ecological function of the associated brook, which is a MassWildlife-certified Coldwater Fishery Resource and falls within the Shenob Brook Area of Critical Environmental Concern. Dam removal has many environmental benefits, including improved water quality, restoration of natural sediment and nutrient transport regimes, improvement to aquatic habitat, aquatic species passage, creation of wetlands, and increased floodplain connectivity.

The permitting associated with this project will enable additional public and regulator input as well as provide a mechanism for application of conditions to ensure compliance with various laws and regulations. This project will require a 401 Water Quality Certificate (Department of Environmental Protection), Massachusetts Wetlands Protection Act Order of Conditions (Mt. Washington Conservation Commission), Section 106 Historical Certificate (Mass Historic and other signatories), and Section 404 dredge and fill permit (U.S. Army Corps of Engineers).

The Becker Pond Dam Removal Project will have many environmental and community benefits. Requiring an EIR will serve only to duplicate environmental protection measures enveloped in the permits for this project. On behalf of Trout Unlimited, we ask that you waive the EIR requirement and allow this cold-water conservation project to move forward swiftly.

If you have any questions, please don’t hesitate to contact Henry Sweren at (413)822-5216 or hsweren8@aol.com

Sincerely,
Henry Sweren, President
Taconic Chapter – Trout Unlimited

inter·fluve
INVESTIGATE
DESIGN
RESTORE

July 2, 2020

MEPA Office
Attn: Anne
100 Cambridge St., Suite 900
Boston, MA 02114

Re: EEA No. 16226 Becker Pond Dam Removal Project (Mt. Washington) Expanded Environmental Notification Form (EENF) and Request for Waiver of Mandatory Environmental Impact Report (EIR) – Supplemental Information

Dear Ms. Canady,

On behalf of the landowner and Proponent, The Nature Conservancy (TNC), and in partnership with the Massachusetts Division of Ecological Restoration (DER), Inter-Fluve is submitting the following supplemental information to the previously prepared EENF and request for waiver of the mandatory EIR for the Becker Pond Dam Removal Project (Project; EEA No. 16226).

Introduction

As part of the MEPA review process for the proposed project, a virtual site visit was held on June 22, 2020. The consultation session was attended by MEPA staff; the project Proponent; other project partners; federal, state, and local agency staff; and members of the public. A number of questions about the project were raised and answered during the call; however, it was recognized that two particular issues related to sediment management and access would be best addressed through the submission of supplemental information to the MEPA office. The purpose of this document is to expand upon the alternatives analysis submitted with the project EENF and provide more information about site access.

Revised Alternatives Analysis

As stated previously, this project will require numerous local, state, and federal approvals following MEPA review. All Federal Clean Water Act Section 401 activities are subject to an alternatives analysis as part of DEP's review process for the Water Quality Certification. Additionally, alterations to Riverfront Area and Bordering Vegetated Wetlands require the presentation of an alternatives analysis under the Massachusetts Wetlands Protection Act (WPA; Ch. 131, Section 40) and Regulations (Regulations; 310 CMR 10.00 et seq.). The intent of this revised analysis is to identify the full range of options for this Project, and the various issues and opportunities associated with each one. In the original EENF, the Proponent presented three (3) alternatives that represented logical potential approaches for the site. However, a fourth alternative, which was presented to the project team by DEP at a pre-application meeting in October 2019, was unintentionally omitted. The revised alternatives analysis includes this fourth alternative, along with the advantages and disadvantages associated with each.

Offices Nationwide
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617.765.3782 www.interfluve.com

- No-Action alternative (Alternative 1);
- Full dam removal with passive downstream sediment release (Alternative 2); and
- Full dam removal with full mobile sediment removal (Alternative 3); and
- Full dam removal with partial mobile sediment removal (Alternative 4; Preferred).

It should be noted that the preferred alternative has changed from Alternative 2 to Alternative 4. Given the sensitive receiving areas (i.e., Sages Ravine) located downstream of the site, it has become clear that additional care would be required to meet the WPA regulatory standards for ecological restoration projects, which require that all "practicable" measures be taken to "avoid" or "minimize" impacts (see 310 CMR 10.13(1)(d) and 10.24(a)(3)(d)3). Based on subsequent review and discussion of collected data and other known information, Alternative 4 was selected as the alternative which appears to best reduce the risk of downstream sedimentation and best meet the requirements of the WPA Regulations, while recognizing feasibility and cost limitations of the project as well. Further discussion of Alternative 4 is provided below.

The Proponent and project partners wish to emphasize that no sediment management approach can guarantee with one-hundred percent certainty that downstream sedimentation will not occur, particularly during construction and early in the restoration trajectory. Short-term impacts are expected in order to address the long-term ecological consequences caused by dams. In addition, sediment transport is a natural process. Its restoration is one of the ecological functions that benefit most from small dam removal projects like this one. Regardless of approach, storm events and other stochastic perturbations may mobilize impoundment sediments, even those that have been stabilized. Best management practices will be used to minimize risk throughout construction, and the Proponent has proposed to monitor sediment migration in order to better understand how sediment might move through this type of system. Details of the monitoring plan will be developed and refined based on agency input during the permitting process.

For the majority of dam removal projects undertaken in Massachusetts, the preferred sediment management alternative is not typically identified until review of the project under Section 401 of the Clean Water Act, which is a permit process administered by DEP. The project team will look to work collaboratively with DEP during the permitting process to identify the specifics of any selected approach.

Alternative 1: No-Action Alternative

The No-Action alternative in this case would eliminate the cost of dam removal and stream restoration and would allow project partners to focus their attention on other projects. This alternative would preserve the shallow impoundment environment which would continue to fill in with sediment over time. However, this No-Action alternative would continue to put potential visitors at risk due to the unsafe condition of the dam. This alternative would also continue the long history of passage constraints for aquatic organisms and continued deposition of sediment and organic material within the impoundment. Dam removal, stream restoration, and reduction in safety hazards are the primary goals of this proposed project; the No-Action alternative would not serve the project purpose.

Alternative 2: Full dam removal and passive downstream release of impounded sediment

This alternative includes the removal of the full vertical and lateral extent of the dam and restoration of the adjacent side slopes and channel in the footprint of the dam. With this alternative, approximately 550 cubic yards[1] of impounded sediment would be passively released downstream following dam removal. This sediment would supplement sediment-starved reaches of the stream and Schenob Brook, with finer-grained materials being mobilized well downstream. The stream at the dam would be expected to match the step-pool-riffle structure of the stream observed downstream. The concrete from the dam would be removed to an off-site facility to be recycled, and disturbed valley slopes would be stabilized with biodegradable fabric. Based on previous project experience, the organic nature of the sediments, and abundant seed sources from within the surrounding forest and upstream headwater wetlands, it is anticipated that the former impoundment would revegetate naturally, without need for seeding.

This alternative would result in the conversion of the shallow impoundment to a free-flowing stream with overbank floodplain and bordering wetland. Any time there is a significant change in habitat type, it's important to consider the potential impacts to the various species that utilize the site. Generally, the literature suggests that the restoration of natural ecological processes and associated benefits to native aquatic species though dam removal is expected to outweigh potential negative impacts[2]. Studies have demonstrated increased diversity of both aquatic and native species[3], among other benefits. For this project, removal of the dam and loss of the impoundment would result in improved connectivity allowing fish to utilize the entirety of the brook, from the headwaters to its confluence with Schenob Brook (noting that there may be some natural barriers to movement within Sages Ravine). Generalist, warm-water species (e.g., smallmouth bass) that often exist in dam impoundments (although it's unclear if that is the case here) will have less habitat area, while cold-water species (e.g., brook trout) would benefit from moderated stream temperatures and expansion of accessible habitat. As observed at other similar dam removal project sites in Massachusetts, most waterfowl, mammals, and herpetofauna (e.g., salamanders, turtles, snakes, etc.) would continue to utilize the former impoundment area, or move to other ponds and streams within the upper Becker Pond watershed and surrounding areas (e.g., Lee Pond Brook watershed). However, it is acknowledged that this change may negatively affect certain species dependent on open water systems (and associated habitat types) for all or a portion of their respective life histories. For example, those herpetofauna which have limited dispersal ranges (affecting their ability to find alternative habitat), and require open water for all or a portion of their lifecycle could be negatively affected. Consultation with the Massachusetts Natural Heritage and Endangered Species Program has confirmed that there are no known rare or endangered species with this life history in the impoundment area.

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[1] 550 cubic yards is considered the "mobile portion" of impounded sediment. This is the estimated sediment volume that would be mobilized through natural channel-forming processes shortly after dam removal. This amount represents approximately one-third of the estimated total sediment behind the dam (~1,500 cubic yards). Storm events or other stochastic perturbations may mobilize additional material over time.

[2] American Rivers. (2002). *The Ecology of Dam Removal*. Retrieved 7/1/20 from https://www.americanrivers.org/conservation-resource/ecology-dam-removal/

[3] Hill, M.J., E.A. Long, and S. Hardin. 1993. Effects of Dam Removal on Dead Lake, Chipola River, Florida. Apalachicola River Watershed Investigations, Florida Game and Fresh Water Fish Commission. A Wallop-Breaux Project F-39-R, 12 pp.

This alternative has the lowest associated implementation cost and would likely achieve the maximum ecological benefit of the dam removal. However, it would result in higher risk of sedimentation within Sages Ravine. As such, it has been removed from consideration as the preferred alternative.

Alternative 3: Full dam removal with full impounded sediment removal

Alternative 3 would provide the same level of dam removal as Alternative 2, but would also include mechanical removal of the total 1,500 cubic yards of impounded sediment and disposal in a landfill. The habitat and species use transitions would be identical to those of Alternative 2 with a conversion of the impoundment to a stream with bordering wetlands and floodplain.

The purpose of complete sediment removal would be to minimize potential impacts to downstream receiving areas such as Sages Ravine. Although this is a technically feasible option and would lower the risk of sedimentation downstream, it does not achieve the objective of pursuing an efficient and effective dam removal project that will minimize the construction impact outside of the dam footprint and keep implementation costs reasonable.

This alternative would require extensive water control to re-route the stream during construction and then excavate and haul out the sediment. In order to be safely transported, the sediment dewatering would require an extensive cleared and level space, thus increasing the area of impact in the Riverfront Area. The sediment would then need to be transferred to road-worthy dump trucks and hauled to a landfill. Off-site hauling would cause substantial wear and tear to the access road and on East Street, which is unpaved in the vicinity of the site. Finally, this alternative would also involve extensive seeding and revegetation of the former impoundment area with associated monitoring and maintenance. This additional work would substantially increase costs, and could make the project unappealing to potential funders and/or direct funding away from other projects.

Alternative 4 (Preferred): Full dam removal with partial impounded sediment removal

This alternative would provide the same level of dam removal as Alternatives 2 and 3 and would include mechanical removal of a portion of the 550 cubic yards of impounded sediment that has been determined to be the readily mobile portion[4] in order to create a pilot channel through the impoundment to facilitate channel formation. The excavated impounded sediment would be disposed of at an off-site landfill or (preferably) reused for shaping and grading on site. The benefit of this alternative would be reduced potential for temporary sediment impacts to downstream receiving areas relative to Alternative 2.

This approach, although technically feasible, would be challenging at this site and likely not prevent all sediment movement because the narrow valley bottom, irregular bedrock and boulder pre-dam surface would likely inhibit complete removal of sediment within the pilot channel. The nature (primarily sand and fines) and relatively shallow depth of impounded sediment also make this material easy to displace and mobilize. Extensive water control would be required to re-route the stream during construction and then excavate and haul out the sediment. The limits of disturbance would be substantially greater than the footprint of the excavated channel, and the activity would inevitably

---

[4] The exact volume and extent of channel excavation will be determined in consultation with the permitting agencies and will reflect a balance of controlling short term impacts in the most feasibility.

mobilize some sediment to benefit the downstream reaches. This Alternative would require a smaller area of active revegetation as compared to Alternative 3.

Similar to Alterative 3, sediment that could not be re-used on site would need to be dewatered, then transferred to road-worthy dump trucks and hauled to a landfill. Off-site hauling of material would cause substantial wear and tear on the access road and on East Street. The final details of the on-site placement in upland areas would need to be discussed with Natural Heritage and Endangered Species Program because the site and surrounding land is within a mapped Priority Habitat. This alternative would result in identical transition of wetland resource areas and habitat uses as described in Alternative 2.

This alternative would provide a reduced potential for sediment impacts to Sages Ravine while avoiding the cost of complete sediment removal (Alternative 3) and providing similar ecological benefit to Alternative 2. As such, this has been selected as the preferred alternative.

Access Road

As noted in the EENF, there is an existing access road extending from East Street to the dam site. Although the majority of this access road is on land controlled by the Proponent, the stretch closest to East Street is held by a private landowner (Parcel ID: Map 7, Lot 5), and the owner has not allowed access across the property. In order to address the site access needs of the project, the Proponent has proposed construction of a temporary access road from East Street to bypass the property (see 75% Design Plans). Temporary and permanent impacts from this access road construction are included in the EENF.

While attempts have been made to limit the amount of disturbance associated with the access, the road would have to be constructed through mature forest, and would increase project costs by up to $25,000. The Proponent's preference is to avoid these impacts and additional costs; therefore, the Proponent has been exploring options for working with the landowner. It is unclear at this time if or when an agreement might be reached; however, the Proponent is committed to exhausting all practicable options to avoid construction of the access road. If the new access road is constructed, it would be narrowed using revegetation techniques following construction and utilized as a permanent hiking trail.

Thank you for your time and consideration of this additional information.

Sincerely,

Candice Constantine

Candice Constantine, PhD, PE
617-909-7569
cconstantine@interfluve.com

Attachment B

Becker Pond Dam Removal Project
Mt Washington, MA
SEIR - EEA File #16226

ANNOTATED COPY OF SECRETARY'S CERTIFICATE & COMMENTS RECEIVED IN RESPONSE TO EENF (JULY 31, 2020)

The Commonwealth of Massachusetts
Executive Office of Energy and Environmental Affairs
100 Cambridge Street, Suite 900
Boston, MA 02114

Charles D. Baker
GOVERNOR

Karyn E. Polito
LIEUTENANT GOVERNOR

Kathleen A. Theoharides
SECRETARY

Tel: (617) 626-1000
Fax: (617) 626-1181
http://www.mass.gov/eea

July 31, 2020

CERTIFICATE OF THE SECRETARY OF ENERGY AND ENVIRONMENTAL AFFAIRS ON THE EXPANDED ENVIRONMENTAL NOTIFICATION FORM

PROJECT NAME : Becker Pond Dam Removal
PROJECT MUNICIPALITY : Mt. Washington
PROJECT WATERSHED : Housatonic River
EEA NUMBER : 16226
PROJECT PROPONENT : The Nature Conservancy
DATE NOTICED IN MONITOR : June 10, 2020

Pursuant to the Massachusetts Environmental Policy Act (MEPA; M.G. L. c. 30, ss. 61-62I) and Sections 11.06 of the MEPA regulations (301 CMR 11.00), I have reviewed the Expanded Environmental Notification Form (EENF) and hereby determine that this project **requires** the preparation of an Environmental Impact Report (EIR). To streamline the review of this project which has been identified as a designated Priority Project by the Division of Ecological Restoration (DER), I will allow the Proponent to prepare a Single EIR pursuant to 11.06(8) rather than a Draft and Final EIR.[1]

Project Description

As described in the Expanded Environmental Notification Form (EENF), the Proponent, the Nature Conservancy, proposes to remove the Becker Pond Dam and restore an unnamed brook that joins Schenob Brook downstream of Sages Ravine. The project involves the excavation and removal of the dam and the related excavation of a stream channel. The project is intended to restore natural flow of the unnamed brook, improve fish passage, and eliminate a source of thermal stress on an important designated coldwater fishery stream.

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[1] The EENF included a request that I grant a Waiver from the requirement to prepare a Mandatory EIR. The Proponent's consultant submitted a request that I allow a Single EIR to be prepared in lieu of the usual two-stage Draft and Final EIR process, in the event that I decline to grant a full EIR Waiver.

The dam is a 95-foot (ft) long earthen embankment with a concrete core wall. The structural height is 14.3 ft and the crest of the concrete spillway is approximately 2.3 ft below the top of the concrete core wall; the dam has a weir length of 23.2 ft. The concrete apron extends approximately 16.8 ft downstream of the base of the spillway. A visual inspection completed in 2016 found the dam in poor condition. The left training wall was cracking and had slipped off the foundation. There was also significant erosion of the earthen embankment adjacent to the wall. The wooden bridge crossing the dam is partially collapsed and has been cordoned off by the Nature Conservancy. Identified deficiencies with the dam include inability of the dam to safely pass the Spillway Design Flood (SDF) without overtopping the embankments; failure of embankment walls; debris within the spillway approach and discharge areas; and deterioration of portions of the pedestrian bridge.

The dam blocks the natural movement of fish and other aquatic life and prevents the natural movement of sediment. Removal of the dam will restore the natural ecological functions of the waterway and restore water temperatures, dissolved oxygen levels and natural sediments. The project also removes the potential safety hazard that the dam and bridge present. DER selected the Becker Pond Dam Removal as a designated Priority Project in 2018 and worked with the Nature Conservancy to develop a restoration approach for this site that will restore fish passage and wildlife habitat. This site is also part of a University of Massachusetts (UMass) research project that proposes to address the knowledge gap surrounding water quality changes following dam removal. The UMass research project will monitor and take measurements of the water quality (temperature and dissolved oxygen), aquatic macro-invertebrates, and fish assessments. These measurements will be taken by UMass before and after the dam removal and will be published as part of a student thesis/dissertation and in journal articles.

Specifically, the project will include removal of the full vertical and lateral extent of the dam and restoration of the adjacent side slopes and channel in the footprint of the dam. The Preferred Alternative was revised during the MEPA review period to also include mechanical removal of a portion of the 550 cubic yards (cy) of impounded sediment that has been determined to be the readily mobile portion in order to create a pilot channel to facilitate channel formation. The excavated sediment would be reused for shaping and grading on site. Any sediment that cannot be reused on-site will be disposed of at an off-site landfill. The benefit of this alternative would be reduced potential for temporary sediment impacts to downstream receiving areas. Sediment that could not be re-used on site would need to be dewatered and hauled to a landfill. [2]

As noted in the EENF, there is an existing access road extending from East Street to the dam site. Although the majority of this access road is on land controlled by the Nature Conservancy, the stretch closest to East Street is held by a private landowner and the owner has not allowed access across the property. In order to provide construction access to the site, the Nature Conservancy has proposed construction of a temporary access road from East Street to bypass the property. This temporary access road would be located entirely within the Nature Conservancy's property and connect directly to East Street to the existing dirt road located on the Nature Conservancy's property. Impacts from this access road construction will include removal of trees from a mature forest. The Nature Conservancy proposes

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[2] See supplemental information related to the alternative analysis and site access provided on behalf of the Nature Conservancy on July 2, 2020.

revegetation of this temporary access road with non-mature trees following construction and utilization as a permanent hiking trail.

Project Site

Becker Pond covers an area of approximately 0.65 acres. Becker Pond Dam is located on an unnamed brook near Mount Washington State Forest in the southwestern corner of Massachusetts. The dam is a run-of-river dam, does not provide any flood storage and is not under jurisdiction of the Massachusetts Office of Dam Safety. The historical ecological function of the associated unnamed brook is a Coldwater Fishery Resource and falls within the Schenob Brook Area of Critical Environmental Concern (ACEC). Downstream of the site, the brook flows through Sages Ravine and drains to Schenob Brook, a tributary to the Housatonic River. The dam and surrounding property are part of the 800-acre Mount Plantain Preserve, owned by the Nature Conservancy, and are accessible via an unpaved road through private property off of East Street in Mount Washington. The Nature Conservancy's property is used by the public for hunting, fishing, and other recreation. The Nature Conservancy recently constructed a footbridge upstream of the impoundment to connect the original and new Hallig Trails on either side of the brook. The next bridge over the brook (Undermountain Road, Salisbury, Connecticut) is approximately two miles downstream.

Downstream of Becker Pond Dam, the brook flows over steep terrain within a narrow forested valley. The channel is approximately 12 to 15 ft wide with a 1 to 1.5-foot bankfull depth. Frequent, but irregularly spaced constrictions, created by bedrock, narrow the channel to approximately 8 ft in some locations. The channel exhibits substantial complexity in substrate, form, and habitat. Plunge pools are located below these drops. Pools are also located downstream of riffles and on the outside of bends where the channel is eroding along the valley edge.

Upstream of the impoundment, a small stone wall crosses the channel and marks the approximate upstream limit of influence of the dam. The new footbridge, constructed by the Nature Conservancy, is located approximately 50 ft upstream of this stone wall. Upstream of the bridge, for a distance of approximately 100 feet, the channel is steep with boulders and cobbles. Upstream of the steep boulder/cobble area, the channel becomes a lower gradient wetland channel with extensive deciduous wooded swamp wetlands influenced by beaver activity.

Wetland resource areas present in the vicinity of the dam include Bank, Land Under Water (LUW), Riverfront Area (RFA), Bordering Vegetated Wetlands (BVW), and Bordering Land Subject to Flooding (BLSF). Portions of the project site are mapped *Estimated or Priority Habitat of Rare Species* according to the 14th edition of the Massachusetts Natural Heritage Atlas.

Environmental Impacts and Mitigation

As described in the EENF, potential environmental impacts include permanent alteration of 0.98 acres of land and alteration of the following wetland resource areas: Bank (50 linear feet (lf)), LUW (34,600 sf), BLSF (20,100 sf), and RA (251,600 lf). The project includes dredging of approximately 550 cy of sediment.

Measures to avoid, minimize, and mitigate impacts include: use of erosion control best management practices (BMPs) and implementation of a construction-period management plan. Erosion and sedimentation controls will be installed to prevent sediment migration to resource areas.

Jurisdiction and Permits

This project is subject to MEPA review and a mandatory EIR pursuant to 301 CMR 11.03(3)(a)(4) because it requires Agency Actions and will result in the structural alteration of an existing dam that causes a decrease in impoundment capacity. The also exceeds several ENF thresholds at 301 CMR 11.03(3)(b)(1)(f) and 301 CMR 11.03(11)(b) because it will alter one half or more acres of any other wetlands and is located within a designated ACEC (respectively). The project requires a Section 401 Water Quality Certification (WQC) and a Chapter 91 (c.91) Permit from the Massachusetts Department of Environmental Protection (MassDEP). The project is receiving funding from the Division of Ecological Restoration (DER).

The project requires an Order of Conditions from the Mt. Washington Conservation Commission (or in the case of an appeal, a Superseding Order of Conditions from MassDEP). It also requires authorization from the U.S. Army Corps of Engineers (ACOE) under the General Permits for Massachusetts in accordance with Section 404 of the Clean Water Act (CWA).

The project is receiving State Financial Assistance from the Commonwealth, through DER. Therefore, MEPA jurisdiction for the project is broad and extends to all aspects of the project that are likely, directly or indirectly, to cause Damage to the Environment as defined in the MEPA regulations.

Waiver Request

In accordance with Section 11.05(7) of the MEPA regulations, the Nature Conservancy submitted an EENF with a request that I provide a Waiver of the Mandatory EIR requirement, or if the Waiver is not granted (301 CMR 11.11), allow a Single EIR to be prepared in lieu of the usual two-stage Draft and Final EIR process pursuant to Section 11.06(8) of the MEPA regulations. The EENF was subject to an extended public comment period pursuant to Section 11.06(1) of the MEPA regulations. The EENF included a discussion of project consistency with the waiver criteria outlined at 310 CMR 11.11.

As part of the MEPA review process for the proposed project, a virtual MEPA site visit was held on June 22, 2020. Issues related to sediment management and site access were raised during the MEPA site visit. The Nature Conservancy submitted supplemental information on July 2, 2020 to address these issues. The supplemental information provided an expanded alternatives analysis, including selection of a new Preferred Alternative, beyond what was submitted with the project EENF and also provided more information about site access.

Single EIR Request

In accordance with Section 11.05(7) of the MEPA regulations, the Proponent requested that in the case a waiver was not granted, I allow the Proponent to fulfill its EIR obligations under MEPA with a Single EIR, in-lieu of a Draft and Final EIR. According to 301 CMR 11.06(8), I may allow a Single EIR provided that the EENF:

- Describes and analyzes all aspects of the project and all feasible alternatives, regardless of any jurisdictional or other limitation that may apply to the Scope;
- Provides a detailed baseline in relation to which potential environmental impacts and mitigation measures can be assessed; and
- Demonstrates that the planning and design of the project use all feasible measures to avoid potential environmental impacts.

Review of the EENF

The EENF provided a description of existing and proposed conditions, preliminary project plans, results of hydrologic and hydraulic (H&H) modeling, sediment analysis results and an alternatives analysis, and identified measures to avoid, minimize and mitigate environmental impacts. The EENF notes that the Nature Conservancy has been working in partnership with State Agencies and stakeholder groups including DER and MassDEP. The EENF originally proposed a Preferred Alternative of a Full Dam Removal with Passive Downstream Release of Impounded Sediment Alternative. As noted above, supplemental information provided on July 2, 2020 selected a new Preferred Alternative which includes the Full Dam Removal with a Partial Impounded Sediment Removal of 550 cy Alternative.

I received a number comment letters, including from project partners, that were supportive of the project and the Nature Conservancy's request for an EIR Waiver because of the project's positive ecological impacts including improved water quality, restoration of natural sediment and nutrient transport regimes, improvement to aquatic habitat, aquatic species passage, creation of wetlands, and increased floodplain connectivity. I also received a number of comment letters, including from the Town of Mt. Washington Select Board and the Berkshire Regional Planning Commission (BRPC), requesting further MEPA review to address deficiencies that remain within the alternatives analysis, the assessment of the potential environmental impacts and environmental mitigation measures.

Alternatives Analysis

The Nature Conservancy considered four alternatives: the No Action Alternative; Full Dam Removal with Passive Downstream Release of Impounded Sediment Alternative; Full Dam Removal with Full Impounded Sediment Removal Alternative; and the Full Dam Removal with Partial Impounded Sediment Removal Alternative (the new Preferred Alternative). Alternatives were evaluated based on consistency with project goals, feasibility, cost, and impacts to environmental resources. Alternatives include the following:

1. Alternative 1: No-Action Alternative

The No-Action alternative would eliminate the cost of dam removal and stream restoration. This alternative would preserve the shallow impoundment environment which would continue to fill in with sediment over time. However, this No-Action alternative would continue to pose a safety risk due to the structural deficiencies of the dam. This alternative would also continue the long history of passage constraints for aquatic organisms and continued deposition of sediment and organic material within the impoundment. Dam removal, stream restoration, and reduction in safety hazards are the primary goals of this proposed project; the No-Action alternative would not serve the project purpose and was dismissed.

2. Alternative 2: Full Dam Removal with Passive Downstream Release of Impounded Sediment Alternative

This alternative includes the removal of the full vertical and lateral extent of the dam and restoration of the adjacent side slopes and channel in the footprint of the dam. With this alternative, approximately 550 cubic yards of impounded sediment would be passively released downstream following dam removal. This sediment would supplement sediment-starved reaches of the stream and Schenob Brook, with finer-grained materials being mobilized well downstream. The concrete from the dam would be removed to an off-site facility to be recycled, and disturbed valley slopes would be stabilized with biodegradable fabric. This alternative has the lowest associated implementation cost. However, it would result in higher risk of sedimentation within Sages Ravine. Material stored within the impoundment and mobilized following dam removal would be dispersed by the brook downstream of the dam. The primary impacts of sediment pulses are likely to include filling of pools, fining of the channel bed, and burial of other habitat features and/or aquatic species that cannot quickly mobilize and adapt to rapidly changing conditions. Most deposition is likely to be temporary; however, permanent deposition of a portion of the mobilized sediment may occur in secondary channels and low-lying floodplain areas. As such, it has been removed from consideration as the preferred alternative as indicated previously.

3. Alternative 3: Full Dam Removal with Full Impounded Sediment Removal Alternative

This alternative would include dam removal as in Alternative 2, but would also include mechanical removal of the total 1,500 cy of impounded sediment and disposal in a landfill. The purpose of complete sediment removal would be to minimize potential impacts to downstream receiving areas such as Sages Ravine. Although this is a technically feasible option and would lower the risk of sedimentation downstream, this alternative would require extensive water control to re-route the stream during construction and then excavate and remove the sediment. In order to be safely transported, the sediment dewatering would require an extensive cleared and level space, thus increasing the area of impact in the Riverfront Area. The sediment would then need to be transferred to dump trucks and hauled to a landfill. Finally, this alternative would also involve extensive seeding and revegetation of the former impoundment area with associated monitoring and maintenance costs.

4. Alternative 4 (*Preferred Alternative*): Full Dam Removal with Partial Impounded Sediment Removal Alternative

This alternative would provide the same level of dam removal as Alternatives 2 and 3 and would include mechanical removal of a portion of the 550 cy of impounded sediment that has been determined to be the readily mobile portion in order to create a pilot channel through the impoundment to facilitate channel formation. The excavated impounded sediment would be disposed of at an off-site landfill or (preferably) reused for shaping and grading on site. The benefit of this alternative would be reduced potential for sediment impacts to downstream receiving areas relative to Alternative 2 because 550 cy would be mechanically removed and thus not flow downstream. As with Alternative 3, extensive water control would be required to re-route the stream during construction and then excavate and haul out the sediment. The limits of disturbance would be greater than the footprint of the excavated channel (although not quantified in the supplemental material). However, the Preferred Alternative would require a smaller area of active revegetation as compared to Alternative 3. The Preferred Alternative would provide a reduced potential for sediment impacts to Sages Ravine while avoiding the cost of complete sediment removal (Alternative 3) and providing similar ecological benefit to Alternative 2. As such, this has been selected as the Preferred Alternative.

Wetlands and Waterways

The Mt. Washington Conservation Commission will review the project to determine its consistency with the limited project provisions of the Wetlands Protection Act (WPA), the Wetlands Regulations (310 CMR 10.00), and associated performance standards, including stormwater management standards (SMS). MassDEP will review the project to determine its consistency with the 401 WQC regulations (314 CMR 9.00). The Preferred Alternative as proposed includes removal of a portion of sediment in the impoundment and stabilization of certain sediments in place. While incidental movement of some sediment downstream is expected, the Preferred Alternative calls for construction of a pilot channel in the impoundment through removal of approximately 550 cy of sediment in an effort to prevent the majority of sediment within the impoundment from being mobilized and discharged to the receiving water. The Preferred Alternative will have a monitoring plan to ensure that this approach works as anticipated. I refer the Proponent to comments from MassDEP which identify issues with the wetland delineation, quantification of impacts, and identify discrepancies with wetland resource areas identified on the plans. Additional information to address this issue is required in the Single EIR.

The EENF includes a sediment characterization study within the Becker Pond Dam impoundment in accordance with 401 WQC regulations. The material sampled was composed of sand, silt, and clay with a median grain size for all samples in the medium sand range. The analyses showed a reduction in median grain size and increase in fines (silt and clay) content in the downstream direction from approximately 19% fines in the upstream sample to 39% fines in the downstream sample. The EENF estimated the total volume of impounded sediment is approximately 1,500 cy. The watershed has had very little development or agriculture, and the EENF concludes that there is low potential for the impounded sediment to contain oil or other hazardous materials. In addition, chemical testing results show that concentrations of the majority of the pollutants tested were below detection levels.

Based on the results of sediment sampling, the EENF proposes to dispose of the dredged material on-site in accordance with MassDEP policy, as applicable. The dredged spoils shall be managed and disposed in accordance with conditions of a 401 WQC as detailed in the *MassDEP Interim Policy COMM 94-007 Sampling, Analysis, Handling & Tracking Requirements for Dredged Sediment Reused or Disposed at Massachusetts Permitted Landfills*.

Wildlife and Ecological Resources

Becker Pond Dam is a run-of-river dam, does not provide any flood storage and is not under jurisdiction of the Massachusetts Office of Dam Safety. The historical ecological function of the associated unnamed brook is a Coldwater Fishery Resource and falls within the Schenob Brook ACEC. The Schenob Brook ACEC, with its associated wetlands, comprises one of the largest continuous calcareous seepage swamp in Massachusetts and contains one of the largest examples of calcareous fens in southern New England. Coldwater Fishery Resource habitats are a declining resource in Massachusetts due to climate change and other anthropogenic impacts. There are no other impoundments or current dams along unnamed brook downstream of Becker Pond Dam. As stated in the EENF, temperature data collected showed temperatures above the known thresholds for trout in Becker's Pond. Fish community sampling by UMass found exclusively warm-water tolerant species in the pond, while sampling upstream and at locations downstream of the dam showed an increasing proportion of coldwater-dependent species (such as trout) as the distance from the pond increased. According to the EENF, the Becker's Pond contains higher temperatures of water than the free-flowing areas of unnamed brook downstream of the dam. According to the EENF, the project will improve the ecological function of the brook and improve community resiliency by eliminating the risk of dam failure and need for maintenance; restoring the unnamed brook's natural channel, water temperatures, dissolved oxygen levels; and restoring natural sediment transport pathways downstream of the dam.

Climate Change Adaptation and Resiliency

The effects of climate change, including increased frequency and intensity of precipitation events, underscore the importance of proactively managing dam infrastructure. The EENF included the results of the hydraulic/hydrologic analysis which was used to design the project and to gauge its potential downstream impacts. The hydraulic analysis and the hydrologic modeling were conducted in order to model to estimate water surface profiles under various flow conditions and channel/breach configurations.

According to the EENF, under existing conditions the Becker's Pond Dam cannot adequately pass the 100-year, 24-hour storm event and includes flow overtopping the dam. Under proposed conditions, the restored channel will, at minimum, pass the 100-year flood and during storms with higher flows the former pond will act as a flood storage area. The EENF did not address how the effects of climate change may impact storm frequency or intensity. However, the dam is in poor condition and failure is expected. A visual inspection carried out in 2016 found with several critical issues with the dam, notably, the left training wall, which is cracked and failing, has slipped off its foundation. The EENF also notes that the inspection found significant erosion of the earthen embankment adjacent to the wall and cracked and spalling concrete in other areas. The wooden bridge crossing the dam has partially collapsed and has been cordoned off and warning signs posted. As indicated in the EENF, the project is intended to provide immediate benefits by reducing the potential risks to public safety and the environment associated with dam failure.

Greenhouse Gas Emission (GHG)

This project is subject to review under the May 2010 MEPA Greenhouse Gas Emission (GHG) Policy and Protocol ("the Policy) because it exceeds thresholds for a mandatory EIR. The GHG Policy includes a de minimus exemption for projects that are expected to produce minimal GHG emissions. As rehabilitation of an existing dam, GHG emissions will be limited to the construction period of the project, and are anticipated to be small. As such, this project falls under the GHG Policy's de minimus exemption and the Nature Conservancy was not required to submit a GHG analysis in conjunction with the EENF. The Nature Conservancy will reduce construction-period emissions through the use of ultra-low sulfur diesel fuel (ULSD) and anti-idling requirements.

Construction Period

Construction activities described in the EENF include the demolition and removal of the existing dam, construction of the stream channel, and dredging activities. The dam removal will include removing the full vertical and lateral extent of the concrete core wall and removing other concrete components including the apron and the spillway. The concrete material will be removed from the channel (to a staging area), broken into pieces, and removed to an approved facility. According to the EENF, the area of the stream impacted by construction activities will be restored to pre-construction conditions or better at the conclusion of the project. These restoration activities will include the placement of a series of specially-formulated seed mixes containing native wetland and upland species.

All construction and demolition activities should be managed in accordance with applicable MassDEP's regulations regarding Air Pollution Control (310 CMR 7.01, 7.09-7.10), and Solid Waste Facilities (310 CMR 16.00 and 310 CMR 19.00, including the waste ban provision at 310 CMR 19.017). The project should include measures to reduce construction period impacts (e.g., noise, dust, odor, solid waste management) and emissions of air pollutants from equipment, including anti-idling measures in accordance with the Air Quality regulations (310 CMR 7.11).

The Nature Conservancy will select project contractors that have installed retrofit emissions control devices to reduce emissions of volatile organic compounds (VOCs), carbon monoxide (CO) and particulate matter (PM) from diesel-powered equipment. Off-road vehicles are required to use ULSD. The Nature Conservancy is advised that if oil and/or hazardous material are identified during the implementation of this project, notification pursuant to the Massachusetts Contingency Plan (MCP, 310 CMR 40.0000) must be made to MassDEP.

The EENF indicates the site does not contain any structures listed in the State Register of Historic Places. The Massachusetts Board of Underwater Archaeological Resources (BUAR) notes that if any submerged cultural/archaeological resources are encountered during the course of the project, the Nature Conservancy should take steps to limit adverse impacts to resources and notify BUAR immediately.

Conclusion

Based on consultation with State Agencies and review of comment letters, I am declining the request to waive the EIR process in its entirety, but will allow the Proponent to file a Single EIR in accordance with the limited Scope below. The primary emphasis of this Scope is to establish baseline environmental conditions and resource areas; assess potential environmental impacts; provide additional description and analysis of other potential alternatives to the project and to provide additional information necessary to support selection of the Preferred Alternative.

SCOPE

General

The Single EIR should follow Section 11.07 of the MEPA regulations for outline and content, as modified by this Scope. It should respond to comments received on the EENF. The Single EIR should include a detailed description of the proposed project and describe any changes to the project since the filing of the EENF. (*comment 1-1*) The Single EIR should include updated plans to reflect any modifications to the project design. (*comment 1-2*) The Single EIR should identify and commit to specific environmental mitigation measures and provide draft Section 61 Findings.(*comment 1-3*) The Single EIR should include a list of required State Agency Permits, Financial Assistance, or other State approvals, as well as any local or federal permitting. (*comment 1-4*)If necessary, it should provide an updated description and analysis of applicable statutory 1-1 1-2 1-3 1-4 and regulatory standards and requirements, and a description of how the project will meet those standards. It should provide a detailed description of construction procedures for all phases.

The Preferred Alternative was selected during the course of MEPA review without adequate identification of impacts or a full opportunity for public comment and input. The Single EIR should 1-5 include additional description and analysis of the Preferred Alternative including (*comment 1-5*) a more precise delineation of impacted environmental resource areas, the potential ecological benefits of dam removal including for species habitat, any associated site plans for the Preferred Alternative and permitting requirements, and a description of how recreational opportunities will be maintained through the Preferred Alternative.

According to supplemental materials provided, under the Preferred Alternative "the limits of disturbance would be substantially greater than the footprint of the excavated channel." The Single EIR should provide additional information with respect to the limits of disturbance, environmental impacts 1-6 and all proposed mitigation measures. (*comment 1-6)* In addition, according to the supplemental materials, the final details of the on-site placement of some of the 550 cy of dredged material will take place on upland areas. Portions of the project site are mapped *Estimated or Priority Habitat of Rare Species* according to the 14th edition of the Massachusetts Natural Heritage Atlas. Therefore, any placement of dredged 1-7 sediment should be discussed with Natural Heritage and Endangered Species Program (NHESP). The Single EIR should provide updates on this discussion with NHESP, and an identification of anticipated impacts to rare species if any. (*comment 1-7*)

Alternatives Analysis

The Nature Conservancy considered four alternatives in the EENF: the No Action Alternative; Full Dam Removal with Passive Downstream Release of Impounded Sediment Alternative; Full Dam Removal with Full Impounded Sediment Removal Alternative; and the Full Dam Removal with Partial Impounded Sediment Removal Alternative (the Preferred Alternative). I acknowledge the comments received from several sources indicating that a fifth alternative was not included, which involves leaving the dam intact in order to preserve the current recreational uses of the dam while conducting repairs to 1-8 eliminate the safety issues posed by the condition of the dam. The Single EIR should analyze this fifth alternative, in the same manner the other four alternatives were considered and include an evaluation of this fifth alternative based on consistency with project goals, feasibility, cost, and impacts to environmental resources. (*comment 1-8*) The Single EIR should evaluate how other alternatives will 1-9 continue recreational opportunities, (*comment 1-9*) as compared to the fifth alternative described above. The Single EIR should provide any additional analysis of alternatives necessary to support selection of the Preferred Alternative as the alternative that the Proponent asserts will avoid, minimize, and mitigat 1-10 Damage to the Environment to the maximum extent practicable. (*comment 1-10*) The Single EIR should include a description of how the Preferred Alternative compares relative to the dismissed alternatives and describe the differences in impacts to habitat, wetland impacts, sediment transfer within the limit o 1-11 work and downstream. (*comment 1-11*)The Single EIR should include a detailed description of 1-12 alternative construction methodologies that can reduce project impacts. (*comment 1-12*)

Wetlands/Waterways

The Single EIR should clarify the potential extent of permanent impact and temporary wetland alteration for the Preferred Alternative and include a narrative that addresses the projects consistency 1-13

with the Wetland Protection Act (WPA), its implementing regulations (310 CMR 10.00) and associated
performance standards; and demonstrates compliance with 401 WQC standards. (*comment 1-13*) The
Proponent should review and include provisions for bank stabilization along the proposed pilot channel
and adhere to the principles, methods, and techniques of the Natural Resources Conservation Service 1-14
(NRCS) Stream Restoration Design Handbook, National Engineering Handbook Part 654 (Released
September 20, 2007). (*comment 1-14*)

The Single EIR should include narrative and supporting data or graphics as necessary to 1-15
demonstrate that the project can meet all applicable performance standards and regulations. (c*omment
1-15*) The Single EIR should also provide a narrative and plans which clearly identify work activities.
Not all wetland resource areas delineations are apparent or easy to read on the site plans provided in the 1-16
EENF. (*comment 1-16*) All resource areas must be clearly shown on site plans and resource area
alterations quantified on the site plans submitted in the Single EIR. I refer the Nature Conservancy to
MassDEP comments for additional guidance on this issue.

The Nature Conservancy should continue to consider alternative construction timing or 1-17
sequencing that would minimize or mitigate impacts to wetland resource areas and include any updates
in the Single EIR. (*comment 1-17)* It should provide a monitoring and mitigation Plan for wetland 1-18
resource areas, including BVW and LUW. (comment 1-18) The plan should identify the duration of the
monitoring program, methods for assessing wetlands impacts including the effectiveness of creating the
proposed pilot channel to minimize sediment transfer downstream, measures for identifying and
managing invasive species, and potential mitigation measures in the event proposed design is shown to
be less effective than anticipated.

Climate Change and Resiliency

Governor Baker issued Executive Order 569: Establishing an Integrated Climate Change Strategy
for the Commonwealth (EO 569) on September 16, 2016. EO 569 recognizes the serious threat presented
by climate change and directs Executive Branch agencies to develop and implement an integrated
strategy that leverages state resources to combat climate change and prepare for its impacts.
Requirements to analyze the effects of climate change through EIR review is an important part of this
statewide strategy. The Single EIR should discuss potential effects of climate change, including increased
frequency and intensity of precipitation events and extreme heat events, on the project design in the 1-19
context of improving reliability and resiliency of the project or surrounding communities. It should
address potential impacts associated with changes in flow rates, velocity and water depth, and changes in
flood attenuation capacity, including any potential for downstream flooding or exacerbation of
downstream conditions that may result from the removal of the dam. (*comment 1-19*)

Construction Period

1-20
The Single EIR should identify how the Nature Conservancy will avoid and minimize clearing of
trees and other vegetation in the construction of the temporary access road. (*comment 1-20*) The Single 1-21
EIR should describe the techniques that will be used for revegetation of this temporary access road 1-22
following construction and how this area will be utilized as a permanent hiking trail. (*comment 1-21*) The
Single EIR should describe changes to construction methodology based on refinements of the Preferred
Alternative. (*comment 1-22*) The Single EIR should also include information about whether the hauling 1-23
of construction material via East Street is anticipated to cause any damage to this Town maintained road,
and if so, describe potential mitigation measures. (*comment 1-23*)

The Single EIR should provide an update on construction planning, including a description of how the project will comply with MassDEP Solid Waste and Air Pollution Control regulations and the erosion and sedimentation controls that will be implemented throughout the project site to reduce potential impacts to wetland resource areas. The Single EIR should describe any other construction period BMPs that will be employed other than those already disclosed. (*comment 1-24*) 1-24

Mitigation and Draft Section 61 Findings

The Single EIR should provide a separate chapter summarizing proposed mitigation measures including draft Section 61 Findings for each anticipated State Agency Action. The Single EIR should contain clear commitments to implement these mitigation measures, estimate the individual costs of each proposed measure, identify the parties responsible for implementation, and include a schedule for implementation. (*comment 1-25*) 1-25

Response to Comments

The Single EIR should contain a copy of this Certificate and a copy of each comment letter received. (*comment 1-26*) To ensure that the issues raised by commenters are addressed, the Single EIR should include direct responses to comments to the extent that they are within MEPA jurisdiction. This directive is not intended to, and shall not be construed to enlarge the scope of the Single EIR beyond what has been expressly identified in this Certificate. I recommend that the Nature Conservancy use either an indexed response to comments format, or a direct narrative response. 1-26

Circulation

The Proponent should circulate the Single EIR to those parties who commented on the EENF, to any State and municipal agencies from which the Proponent will seek permits or approvals, and to any parties specified in section 11.16 of the MEPA regulations. (*comment 1-27*) The Proponent may circulate copies of the Single EIR to commenters in a digital format (e.g., CD-ROM, USB drive) or post to an online website. However, the Proponent should make available a reasonable number of hard copies to accommodate those without convenient access to a computer to be distributed upon request on a first-come, first-served basis. The Proponent should send correspondence accompanying the digital copy or identifying the web address of the online version of the Single EIR indicating that hard copies are available upon request, noting relevant comment deadlines, and appropriate addresses for submission of comments. The Single EIR submitted to the MEPA office should include a digital copy of the complete document. A copy of the Single EIR should be made available for review in the Mount Washington Public Library.[3] 1-27

K. Theoharides

July 31, 2020
Date

Kathleen A. Theoharides

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[3] Requirements for hard copy distribution or mailings will be suspended during the Commonwealth's COVID-19 response. Please consult the MEPA website for further details on interim procedures during this emergency period: https://www.mass.gov/orgs/massachusetts-environmental-policy-act-office.

Comments received:

06/24/2020	Trout Unlimited - Taconic Chapter
06/29/2020	Town of Mount Washington Select Board
06/30/2020	Division of Ecological Restoration
07/01/2020	Eleanor Dawson
07/01/2020	Ted Dombrowski
07/20/2020	Massachusetts Department of Environmental Protection (MassDEP) Western Regional Office (WERO)
07/20/2020	Berkshire Regional Planning Commission
07/24/2020	Board of Underwater Archaeological Resources (BUAR)
07/24/2020	Housatonic Valley Association
07/24/2020	American Rivers
07/24/2020	Appalachian Trail Conservancy

KAT/ACC/acc

Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection

Western Regional Office • 436 Dwight Street, Springfield MA 01103 • 413-784-1100

Charles D. Baker
Governor

Karyn E. Polito
Lieutenant Governor

Kathleen A. Theoharides
Secretary

Martin Suuberg
Commissioner

July 20, 2020

Kathleen A. Theoharides, Secretary
Executive Office of Energy & Environmental Affairs
Massachusetts Environmental Policy Act Office
Anne Canaday, EEA No. 16226
100 Cambridge Street, 9th Floor
Boston, MA 02114-2524

Re: Becker Pond Dam Removal Project
Mt. Washington EENF

Dear Secretary Theoharides,

The Massachusetts Department of Environmental Protection (MassDEP), Western Regional Office (WERO) appreciates the opportunity to comment on the Expanded Environmental Notification Form (EENF) submitted for the proposed Becker Pond Dam Removal Project in Mt. Washington, Massachusetts. The Proponent (The Nature Conservancy) seeks a Waiver of a Mandatory Environmental Impact Report. Supplemental project information was submitted on July 2, 2020. Becker Pond is approximately 0.65 acres and is not under the jurisdiction of the Office of Dam Safety (ODS). The dam and surrounding property are part of the 800-acre Mt. Plantain Preserve, owned by The Nature Conservancy. The dam is in poor condition with several critical safety and structural issues. A site meeting was held on June 22, 2020. The applicable MassDEP regulatory and permitting considerations regarding wetlands, air pollution, solid waste, hazardous waste and waste site cleanup are discussed.

I. Project Description

The Nature Conservancy, Proponent, is seeking to remove the Becker Pond Dam and restore an unnamed brook that joins Schenob Brook downstream of Sages Ravine. The dam is a 95-foot long earthen embankment with a concrete core wall. The structural height is 14.3 feet and the crest of the concrete spillway is approximately 2.3 feet below the top of the concrete core wall and has a weir length of 23.2 feet. The concrete apron extends approximately 16.8 feet downstream of the base of the spillway. A visual inspection completed in 2016 found the dam in poor condition. The left training wall was cracking and had slipped off the foundation. There was also significant erosion of the earthen embankment adjacent to the wall. The wooden bridge crossing the dam is partially collapsed and has been cordoned off by the The Nature Conservancy. The channel downstream of the dam is approximately 12-15 feet wide, narrowing to 8 feet wide in some areas, to 1 foot in depth.

The dam blocks the natural movement of fish and other aquatic life and prevents the natural i-1
movement of sediment. Removal of the dam will restore the normal ecological functions of
the waterway and restore water temperatures, dissolved oxygen levels and natural
sediments. The project also removes the potential safety hazard that the dam and bridge i-2
present. (*comment i-1*, *comment i-2*)

Some of the estimated 550 cubic yards of pond sediments will likely be removed mechanically to provide a reduced potential for sediment impacts to Sages Ravine Brook and to create a channel through the impoundment to facilitate channel formation. The excavated sediment would be disposed of off-site or reused for shaping and grading on site. The area of land under water to be converted to Bordering Vegetated Wetland is approximately 34,600 square feet.

Environmental impacts associated with this project include:

- 0.98 total acres of existing land
- -20,100 SF Bordering land Subject to Flooding
- -34,600 SF of new other wetland alteration (Land Under Water)
- + 50 LF Bank
- +251,600 FF Riverfront area

II. Required Mass DEP Permits and/or Applicable Regulations

Wetlands
310 CMR 10.00
Water Quality Certificate
314 CMR 9.00
Air Pollution
310 CMR 7.00
Solid Waste
310 CMR 16.00
Hazardous Waste
310 CMR 30.00
Bureau of Waste Site Cleanup
310 CMR 40.000

III. Permit Discussion

Bureau of Water Resource

401 Water Quality Certificate

As proposed, this project will require a Clean Water Act Section 401 Water Quality Certification (WQC) for dredging. (*comment 2-1*) The project as proposed includes removal of a subset of sediments in the impoundment and stabilizing of certain sediments in place. Incidental sluicing of some sediments downstream is expected, though the preferred alternative calls for construction of a pilot channel in the impoundment through removal of approximately 550 cubic yards of sediments in an effort to prevent the majority of sediments within the impoundment from being mobilized and discharged to the receiving water. The Proponent should submit a copy of the application to both the Western Regional and the Boston Office of MassDEP for review. One certificate will be issued following coordination between regional staff and the Boston office. 2-1

Based on the results of sediment sampling, the Proponent proposes to dispose of the dredged material on-site in accordance with MassDEP policy, as applicable. The dredged spoils shall be managed and disposed in accordance with conditions of a 401 Water Quality Certificate Permit as detailed in the *MassDEP Interim Policy COMM 94-007 Sampling, Analysis, Handling & Tracking Requirements for Dredged Sediment Reused or Disposed at Massachusetts Permitted Landfills.*

The Proponent should review and include provisions for bank stabilization along the proposed pilot channel and adhere to the principles, methods, and techniques of the Natural Resources Conservation Service (NRCS) Stream Restoration Design Handbook, National Engineering Handbook Part 654 (Released September 20, 2007). (*Comment 2-2*) 2-2
Specifically, proposed design should include techniques and methods described within the following references:

- *Technical Supplement 14I, Streambank Soil Engineering, Part 654 National Engineering Handbook;*
- T*echnical Supplement 14J, Use of Large Woody Material for Habitat and Bank Protection, Part 654 National Engineering Handbook.*

Wetlands and Waterways

The Site appears to contain Bank (Inland), Bordering Vegetated Wetland, Land Under Water Bodies and Waterways (LUWW), and Riverfront Area. The Proponent notes that there will be 20,100 sq. ft. of Bordering Land Subject to Flooding (BLSF) impacts, though there is evidently no FEMA-mapped floodplain in Mount Washington. This should be clarified. (*comment 2-3*) 2-3

The scope of the project requires that a Notice of Intent (NOI) be filed with the Mount Washington Conservation Commission. Prior to commencement of project construction, a final Order of Conditions (OOC) must be issued by the Commission.

Resource Area Delineation

MassDEP notes resource areas are partially depicted (i.e., Land Under Waterbodies and Waterways), though associated survey flag locations marking the top of Bank and the extent of any Bordering Vegetated Wetlands adjacent to Becker Pond (if existing) are not readily apparent on the site plans provided. Delineation data forms for vegetated wetlands are provided in the EENF, though no vegetated wetlands are depicted on the site plans, including the known wetland near the proposed construction entrance of East Street. All resource areas must be clearly shown on site plans and resource area alterations quantified on the site plans submitted for subsequent permitting. (*comment 2-4*) 2-4

Ecological Restoration Project Provisions

MassDEP recommends that the project be submitted as an Ecological Restoration Project, using WPA Form 3A, (*comment 2-5*) provided the project qualifies as such per the definition found at 310 CMR 10.04 and provided the project meets the *Additional Eligibility Criteria for Dam Removal Projects* outlined at 310 CMR 10.13(2). 2-5

Bureau of Air and Waste

Air Quality

Construction and Demolition Activities

The construction and demolition activity must conform to current Air Pollution Control Regulations. The proponent should implement measures to alleviate dust, noise, and odor nuisance conditions that may occur during the construction and demolition activities. (*2-6*)Such measures must comply with the MassDEP's Bureau of Air and Waste (BAW) Regulations 310 CMR 7.01, 7.09, and 7.10. 2-6

Construction Equipment

MassDEP recommends that the project proponent participate in the MassDEP Diesel Retrofit Program. (*comment 2-7)* All non-road engines shall be operated using only ultra-low sulfur diesel (ULSD) with a sulfur content of 15 ppm pursuant to 40 CFR 80.510. 2-7

Solid Waste

The proponent shall properly manage and dispose of all solid waste generated by this proposed project pursuant to 310 CMR 16.00 and 310 CMR 19.000, including the regulations at 310 CMR 19.017 (waste ban). (*comment 2-8*) In addition, the proponent shall manage 2-8 regulated asbestos and asbestos-containing waste material as special wastes in accordance with 310 CMR 19.061.

Asphalt, brick and concrete (ABC) generated through crushing and reuse on-site must be handled in accordance with regulation and policy. Otherwise, the proponent would need to obtain a site assignment and facility permit for the crushing activity and a Beneficial Use Determination (BUD) for the reuse of the crushed material. The BUD regulations at 310 CMR 19.060 establish levels of assessment for four categories of beneficial use. More information regarding the handling of ABC, and a copy of the 30-day notification form may be found at the following website: http://www.mass.gov/eea/agencies/massdep/recycle/reduce/using-or-processing-asphalt-pavement-brick-and-concrete-.html.

Any discarded objects encountered during the demolition of the former dam shall be removed from the site for disposal as Solid Waste or recycling as appropriate.

Hazardous Waste

Any hazardous wastes generated by the demolition and earthwork activities or universal wastes must be properly managed in accordance with 310 CMR 30.0000. (*comment 2-9*) 2-9

If any hazardous waste, including waste oil, is generated at the site, the proponent must ensure that such generation is properly registered with the Department and managed in accordance with 310 CMR 30.00.

Bureau of Waste Site Cleanup

Spills Prevention

A spills contingency plan addressing prevention and management of potential releases of oil and/or hazardous materials from pre- and post-construction of the dam removal activities should be presented to workers at the site and enforced. (*comment 2-10*) The plan should include but not be limited to, refueling of machinery, storage of fuels, and potential releases. 2-10

IV. Other Comments/Guidance

MassDEP has adequate regulatory authority through the 401 WQC permitting process to determine the potential environmental impacts from the project and to ensure that all feasible measures are taken to avoid, minimize and mitigate any negative impacts as necessary. With respect to Greenhouse Gas (GHG) Emissions, MassDEP concurs that the long term GHG impacts from the construction stage of this project are De Minimis.

The MassDEP permitting process will ensure environmental impacts are avoided where possible and minimized where necessary. MassDEP staff is available for discussions as the project progresses. If you have any questions regarding this comment letter, please do not hesitate to contact Kathleen Fournier at (413) 755-2267.

Sincerely,

Michael Gorski
Regional Director

cc: MEPA File

The COMMONWEALTH OF MASSACHUSETTS
BOARD OF UNDERWATER ARCHAEOLOGICAL RESOURCES
EXECUTIVE OFFICE OF ENERGY AND ENVIRONMENTAL AFFAIRS
251 Causeway Street, Suite 800, Boston, MA 02114-2136
Tel. (617) 626-1014   Fax (617) 626-1240
www.mass.gov/orgs/board-of-underwater-archaeological-resources

July 24, 2020

Kathleen A. Theoharides, Secretary
Executive Office of Energy and Environmental Affairs
Attention: Anne Canaday, MEPA Unit
100 Cambridge Street, Suite 900
Boston, MA 02114

RE: Becker Pond Dam Removal (EOEA #16226), East Street, Mt. Washington, MA

Dear Secretary Theoharides,

The staff of the Massachusetts Board of Underwater Archaeological Resources has reviewed the above-referenced proposed project as detailed in the *Environmental Monitor* of 10 June 2020 and in the Expanded Environmental Notification Form (EENF) and Request for Waiver of Mandatory Environmental Impact Report–Supplemental Information document of 2 July 2020 and offers the following comments.

The Board has conducted a preliminary review of its files, the Massachusetts Historical Commission's Massachusetts Cultural Resources Inventory System (MACRIS), historic maps, and secondary literature sources to identify known and potential submerged cultural resources in the proposed project area. No record of any underwater archaeological resources was found. Based on the results of this review and the nature of the proposed project, the Board expects that this project is unlikely to impact submerged cultural resources. 3-1

Should heretofore unknown archaeological resources be encountered during the course of work, the Board expects that the project's sponsor will take steps to limit adverse effects (take care to not further disturb the archaeological resource and note its precise location) and notify the Board and the Massachusetts Historical Commission, as well as other appropriate agencies, immediately in accordance with the Board's *Policy Guidance for the Discovery of Unanticipated Archaeological Resources.* (comments 3-1 and 3-2) 3-2

The Board appreciates the opportunity to provide these comments as part of the MEPA review process. Should you have any questions regarding this letter, please do not hesitate to contact me at (617) 626-1014, or by email at david.s.robinson@mass.gov.

Sincerely,

David S. Robinson
Director

/dsr
Cc: Brona Simon, MHC
Bonney Hartley, S-MCBMI (via email attachment)
Bettina Washington, WTGH/A (via email attachment)
David Weeden, MWT (via email attachment)

Massachusetts Department of Fish and Game
Division of Ecological Restoration
Invested in Nature and Community

Beth Lambert, Director
Hunt Durey, Deputy Director

Charles D. Baker
Governor
Karyn E. Polito
Lieutenant Governor
Kathleen A. Theoharides
Secretary
Ronald S. Amidon
Commissioner
Mary-Lee King
Deputy Commissioner

June 30, 2020

Secretary Kathleen A. Theoharides
Executive Office of Energy and Environmental Affairs
Attention: MEPA Office
100 Cambridge Street, Suite 900
Boston, MA 02114

RE: EEA No. 16226 / Becker Pond Dam Removal Project

Dear Secretary Theoharides,

The MA Division of Ecological Restoration (DER) supports The Nature Conservancy's request for a waiver of the mandatory Environmental Impact Report (EIR) under 301 CMR 11.11(5) for the Becker Pond Dam Removal Project. DER agrees with the proponent that an EIR would result in undue hardship and that the project meets the EIR waiver requirements, including that an EIR would "not serve to avoid or minimize damage to the environment" and that "the project is likely to cause no damage to the environment".

DER selected the Becker Pond Dam Removal as a designated Priority Project in 2018. Since then, we have partnered with The Nature Conservancy to develop a restoration approach for this site that will restore fish passage and valuable wildlife habitat while removing a public safety hazard. The proposed actions will create a high-quality, self-sustaining riverine system that promotes resiliency within protected lands, including the Schenob Brook Area of Critical Environmental Concern. (*comment i-1*) Removal of the dam will also eliminate the costs and liabilities associated with this relic, hazardous infrastructure. (*comment i-2*)

i-1

i-2

The local, state, and federal permits required for this project will result in a thorough review by regulatory agencies and provide ample opportunity for additional public comment. (comment 4-1) We appreciate this opportunity to comment during the MEPA process. Please do not hesitate to contact me at (617) 626-1542 with any questions.

4-1

Beth Lambert

Beth Lambert
Director

BRPC
Berkshire Regional Planning Commission

KYLE HANLON, Chair
JOHN DUVAL, Vice-Chair
SHEILA IRVIN, Clerk
MALCOLM FICK, Treasurer
THOMAS MATUSZKO, A.I.C.P.
Executive Director

July 20, 2020

Kathleen Theoharides, Secretary
Executive Office of Energy and Environmental Affairs
Attn: Anne Canaday
100 Cambridge Street, Suite 900
Boston, MA 02114

Re: Becker Pond Dam Removal EENF, EEA# 16226

Dear Secretary Theoharides:

The Berkshire Regional Planning Commission (BRPC) hereby submits comments on the Expanded ENF for the Becker Pond Dam Removal Project (EEA #16226) in the Town of Mount Washington. The proposed project has met or exceeded MEPA review thresholds for a Mandatory Environmental Impact Report (EIR) due to impacts to Wetlands, Waterways, and Tidelands and State-Listed Rare Species and meets MEPA review thresholds due to its location within a designated Area of Critical Environmental Concern (ACEC). The Nature Conservancy, the project proponent, has requested a full waiver from the EIR. BRPC respectfully requests that the waiver from the mandatory EIR not be granted and that a Single EIR be required, at a minimum. (*comment 5-1*) 5-1

The Schenob Brook Drainage Basin ACEC, with its associated wetlands, comprises one of the most significant natural communities in Massachusetts. The largest continuous calcareous seepage swamp and the finest examples of calcareous fens in southern New England are located here. Over 40 state-listed rare and endangered species are located in the ACEC. In addition to the requirements of an ENF, an Expanded ENF must include more extensive and detailed information that describes and analyzes a proposed project and its alternatives and assesses its potential environmental impacts and environmental mitigation measures. Despite the submission of supplemental material, the Expanded ENF for the Becker Pond Dam Removal does not include the level of extensive and detailed information that is warranted in order to grant a waiver of the mandatory EIR. (*comment 5-2*) 5-2

The Expanded ENF describes the proposed project, however there are weaknesses and deficiencies that remain within the alternatives analysis, the assessment of the potential environmental impacts and environmental mitigation measures. (*comment 5-2*) According to supplemental materials provided by the proponent, (c under the preferred alternative "the limits of disturbance would be substantially greater than the footprint of the excavated channel", however it does not appear that any additional information has been provided with respect to the limits of disturbance, environmental impacts or proposed mitigation measures. (*comment 5-3*) According to the supplemental materials, the final details of the on-site placement in upland areas would need to be discussed with Natural Heritage and Endangered Species Program because the site and surrounding land is within a mapped Priority Habitat. 5-2 5-3

BRPC is concerned that site access has yet to be determined and the EENF is deficient in its assessment 5-4
of environmental impacts that would result from the creation of an access road. (*comment 5-4*) The
new preferred alternative includes off-site hauling of material that would cause substantial wear and
tear on the access road and on East Street. However, the supplemental materials do not include 5-4
additional information with respect to the wear and tear on the access road and East Street,
environmental impacts or proposed mitigation measures. (*comment 5-4*) Lastly, a fifth alternative has 5-5
not been included, which is leaving the dam intact and repairing the dam to eliminate the safety issues
currently posed by the condition of the dam. (*comment 5-5)* For these reasons, BRPC respectfully 5-1
requests that the waiver from the mandatory EIR not be granted and that a Single EIR be required, at a
minimum. (*comment 5-1*)

The BRPC approved these comments at the July 16, 2020 meeting of the Commission.

Thomas Matuszko, AICP
Executive Director

TOWN OF MOUNT WASHINGTON
2 Plantain Pond Road
Mount Washington, Massachusetts 01258
(413) 528-2839
townofmtwashington.com

June 29, 2020

Executive Office of Energy and Environmental Affairs (EEA)
Attn: MEPA Office
Anne Canaday, EEA No. 16226
100 Cambridge Street, Suite 900
Boston MA 02114

Re: Becker Pond Dam Removal Project (Mt. Washington) Expanded Environmental Notification Form (EENF) and Request for Waiver of Mandatory Environmental Impact Report (EIR)

Dear Ms. Canaday:

Based on the unanimous vote of the Select Board at the meeting of June 29, 2020, and public comments to the board, the Select Board of the Town of Mount Washington opposes the requested waiver of the Mandatory Environmental Impact Report for the Becker Pond Dam Removal Project. (*comment 6-1)* 6-1

The Town strongly supports a full environmental study performed on the entire area, including upstream wetlands, the Becker Pond impoundment area and its adjacent wetlands, and the downstream waterways into Sages Ravine and further into Connecticut, as well as their embankment areas. (*comment 6-1*) 6-1

It is our understanding that in order to perform the work the proponent will have to install and then remove a new access way. This too causes environmental concern. 6-2
Please do not hesitate to contact the Town of Mount Washington Select Board for further clarification, if necessary. (*comment 6*-2)

Sincerely,

Jim Lovejoy, Chair - jimlovejoy@townofmtwashington.com
Gail Garrett - gailg@townofmtwashington.com
Brian Tobin - briantobin@townofmtwashington.com

Town of Mount Washington - Select Board

CC: Martin Suuberg, Commissioner, DEP, martin.suuberg@mass.gov
KathleenBaskin, Ass't Commissioner Bureau of Water Resources, kathleen.baskin@mass.gov
W. "Smitty" Pignatelli, Chair Joint Committee of Resources and Agriculture, rep.smitty@mahouse.gov
Melissa Provencher, BRPC, mprovencher@berkshireplanning.org
Lealdon Langley, Watershed Management, DEP, lealdon.langley@mass.gov
Laura Blake, Watershed Planning Program, DEP, laura.blake@mass.gov

American Rivers
RIVERS CONNECT US®

July 24, 2020

Secretary Kathleen Theoharides
Executive Office of Environmental Affairs
Attention: MEPA Office
100 Cambridge Street Suite 900
Boston, MA 02114

RE: **MEPA File #: 16226**

Becker Pond Dam Removal Project

Dear Secretary Theoharides:

American Rivers supports the request for a waiver of an Environmental Impact Report (EIR) under 301 CMR 11.11(5) for the Becker Pond Dam Removal Project in Mt. Washington, Berkshire County, Massachusetts. Based upon the scientific and engineering analysis included in the EENF, preparation of an EIR for this project would not serve to avoid or minimize damage to the environment, nor would its preparation provide increased benefit to the project or the environment.

American Rivers has worked on dam removals across Massachusetts and the country for the past two decades and time and again we see the benefits conveyed by stream restoration through dam removal. (*comment i-1*) Impoundments formed by dams inundate river and stream habitat, converting it to slower moving and lake-like habitats, trapping sediment and nutrients. The water impounded behind the dam tends to be warmer, reducing dissolved oxygen and water quality. Dam removal reverses these impacts, restoring the natural sediment and nutrient transport regimes, improving water quality, and improving aquatic species passage within the river system. i-1

The Becker Pond dam is a run-of-river dam and does not provide any flood storage, nor does it currently provide any recreational use. Its removal will eliminate a public safety hazard (*comment i-2*) and restore the natural and historical ecological function of the associated brook, which is a MassWildlife-certified Coldwater Fishery Resource and falls within the Schenob Brook Area of Critical Environmental Concern. i-2

Concerns regarding potential temporary impacts downstream following the dam removal are not uncommon. As noted, rivers are dynamic ecosystems. Increasingly as we study dam removals, we demonstrate that the upstream impacts recover quickly to a new habitat type; downstream impacts, for instance from sediment release, particularly i-1 on steep gradient systems such as this, also establish a new equilibrium. (*comment i-1*) Some temporary impacts are not unlike what we see in rivers during and after large storm events.

The basis of this waiver request is founded upon the extensive data collection and analysis of environmental impacts that have been conducted in support of this project to date. These analyses support the overwhelming environmental benefit of the project, and have resulted in the development of strategies to minimize and avoid negative environmental impacts as discussed in the alternatives analysis. This project is also supported by experts from the Massachusetts Division of Ecological Restoration who have decades of restoration experience.

The permitting associated with this project will enable additional public and regulator input as well as a mechanism for application of conditions to ensure compliance with MEPA regulations. This project will require a number of environmental permits, including the 401 Water Quality Certificate (Department of Environmental Protection), Massachusetts Wetlands Protection Act Order of Conditions (Mt. Washington Conservation Commission), Section 106 Historical Certificate (Mass Historic and other signatories), and Section 404 dredge and fill Permit (U.S. Army Corps of Engineers).

The Becker Pond Dam Removal Project will have many environmental and community benefits. On behalf of the dam owner and its restoration partners, I urge you to favorably consider this waiver request. If you have any questions, please don't hesitate to contact me at 413-584-2183 or asingler@americanrivers.org.

Sincerely,

Amy Singler
Director, River Restoration

APPALACHIAN TRAIL
CONSERVANCY®

Karen Lombard
Director of Stewardship & Restoration
The Nature Conservancy
136 West St., Suite 202
Northampton, MA 01060
klombard@tnc.org

July 23, 2020

Dear Karen,

On behalf of the Appalachian Trail Conservancy (ATC) I am expressing our support for i-1
the Becker Pond Dam Removal Project on an unnamed brook in Mt. Washington,
Berkshire County, Massachusetts by The Nature Conservancy (TNC). Removal of the
decrepit dam will restore fish passage and wildlife habitat, (*comment i-1*) while also i-2
removing a public safety hazard. (*comment i-2*)

ATC is interested in this project as a conservation organization and co-managers of the i-1
adjacent public land around the Appalachian Trail near Sages Ravine, a highly popular
Appalachian Trail destination with high natural resource and scenic value. We also
support a restored natural stream flow into Sages Ravine. (*comment i-1*)

We believe it is a best management practice to remove this dam, and that removal of i-1
the dam will restore the natural and historical ecological function of the associated
brook, which is a MassWildlife-certified Coldwater Fishery Resource and falls within the
Shenob Brook Area of Critical Environmental Concern. Dam removal generally has
many environmental benefits, including improved water quality, restoration of natural
sediment and nutrient transport regimes, improvement to aquatic habitat, aquatic
species passage, creation of wetlands, and increased floodplain connectivity.
(*comment i-1*)

ATC supports TNC's due diligence regarding required environmental reviews, permits, 7-1
and public comment opportunities. We request that ATC be notified of when the dam
removal will occur (*comment 7-1*) so that we can inform Appalachian Trail visitors to 7-2
the Sages Ravine area of this project. We would also like to offer monitoring of stream
flow and sediment release at Sages Ravine and look forward to working with TNC on a
monitoring program. (*comment 7-2*)

Please let me know if we can provide any additional support or information.

Hawk Metheny

Hawk Metheny
Senior Regional Director-Northeast
Appalachian Trail Conservancy
hmetheny@appalachiantrail.org

E. A. Dawson
6 Plantain Pond Road
Mount Washington, MA 01258

July 1, 2020

Executive Office of Energy and Environmental Affairs (EEA)
Attn: MEPA Office
Anne Canaday, EEA No. 16226
100 Cambridge Street, Suite 900
Boston MA 02114

Re: Becker Pond Dam Removal Project (Mt. Washington) Expanded Environmental Notification Form (EENF) and Request for Waiver of Mandatory Environmental Impact Report (EIR)

Dear Ms. Canaday:

I strongly support the Selectboard's unanimous vote to oppose a waiver for the Environmental Impact Review for the Becker Pond project. (*comment 8-1)* 8-1

As both a biologist by training and a municipal official, I find it particularly vexing that any organization "dedicated" to "responsible" environmental projects would request that they be allowed to alter the rules set for everyone else. 8-1

I have attached a copy of the Nature Conservancy's own mission statement (*comment 8-2*)and 8-2
I would encourage you to read it in its entirety. I would also encourage you to become familiar
with some of the TNC projects around the country that have changed wild areas into 8-3
commercially viable properties. The extremely fragile barrier islands off the coast of South
Carolina were taken over by the Nature Conservancy and now sport exceedingly popular golf
courses. (*comment 8-3*) Not a win for the ecology there. In our own town we were lead to 8-4
believe that in order to eradicate the evil barberry (invasive to be sure, but spread by birds
and other wildlife and not controllable by herbicides) (*comment 8-4*) that the appropriate
strategy was to use literally tons of Roundup to control the situation. Of course, we were
assured that this was to be used carefully and had no lasting effect on the ecology. I submit
that their position was not only misleading (the data regarding the dangers of this product
were easily accessible) but irresponsible. The population of Mount Washington have excellent
reasons to be skeptical of the Nature Conservancy's assurances.

Within this application is the fact that, to perform the proposed project, an access road will have to be built. There are no details regarding the scale, size or impact of this road or its remediation when the project is completed. This activity will require large equipment to be transported over a gravel road that belongs to the town with absolutely no consideration or reimbursement for the wear-and-tear on any of the town-owned roads. (*comment 8-5*)We have just spent over $12,000.00 for yet another engineering study to remediate the gravel roads. This amount 8-5 just pays for the study, not any of the required work. The study was initiated over the concerns of the residents on exactly that same portion of the road that will be ground zero for this TNC project. Given extremely small number of properties existing in town and the fact that over 60% of those properties are owned by the Commonwealth and the Nature Conservancy (thereby not contributing to the town treasury – as our PILOT money has been cut yet again), the burden of maintain our infrastructure is not inconsiderable.

The population living along that part of the road will be subject to the noise, dust and inconvenience caused by the work being done. (*comment 8-6*) Anyone else owning property up here who would want to "remediate" an area under similar conditions would be paying a huge fee to complete the EIR required. 8-6

Clearly there have been strong concerns voiced regarding the value of the entire project. Impoundments changed the environment dramatically. But recognizing that Those concerns need to be addressed by the Nature Conservancy, not swept aside. Waiving requirements for the EIR will send exactly the wrong message. (*comment 8-7*) 8-7

I am also attaching an email sent out by a resident regarding Becker Pond. I have his permission to do so. It is important that all sides be heard. (*see comments 9-1 through 9-3*) 9-1

Thank you.

Respectfully,

Eleanor Dawson

CC: Martin Suuberg, Commissioner, DEP, martin.suuberg@mass.gov
KathleenBaskin, Ass't Commissioner Bureau of Water Resources, kathleen.baskin@mass.gov
W. "Smitty" Pignatelli, Chair Joint Committee of Resources and Agriculture, rep.smitty@mahouse.gov
Melissa Provencher, BRPC, mprovencher@berkshireplanning.ort
Lealdon Langley, Watershed Management, DEP, lealdon.langley@mass.gov
Laura Blake, Watershed Planning Program, DEP, laura.blake@mass.gov

Housatonic Valley Association

HVA
hvatoday.org

150 Kent Road
PO Box 28
Cornwall Bridge, CT 06754
T: (860) 672-6678

Merwin House
14 Main Street
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T: (413) 298-7024

37 Furnace Bank Road
PO Box 315
Wassaic, NY 12592
T: (845) 442-1039

July 24, 2020

Secretary Kathleen Theoharides
Executive Office of Environmental Affairs
Attention: MEPA Office
100 Cambridge Street Suite 900
Boston, MA 02114

RE: **MEPA File #: 16226**
Becker Pond Dam Removal Project

Dear Secretary Theoharides:

The Housatonic Valley Association, the watershed organization for the Housatonic River is providing this letter in support (submitted electronically) of the waiver request for an Environmental Impact Report (EIR) under 301 CMR 11.11(5) for the Becker Pond Dam Removal Project in Mt. Washington, Berkshire County, Massachusetts. Removal of the dam will restore fish passage and wildlife habitat, while also removing a public safety hazard. HVA has been working to improve aquatic connectivity in the Housatonic watershed for more than ten years. This project, led by The Nature Conservancy, is an important river restoration project in the Housatonic watershed. (*comment i-1*) i-1

As you know, the Secretary may waive an EIR if preparation of the EIR would result in "undue hardship" to the project proponent or would "not serve to avoid or minimize damage to the environment" as described under 301 CMR 11.11(1). Furthermore, we understand that when mandatory EIR review thresholds have been exceeded, the Secretary may grant a waiver of the EIR as described under 301 CMR 11.11(2) based on determination that preparation of an EIR would not provide increased benefit to the project and the environment. Based upon the scientific and engineering analysis included in the EENF, preparation of an EIR for this project would not serve to avoid or minimize damage to the environment, nor would its preparation provide increased benefit to the project and the environment for reasons listed below.

Determinations for an EIR Waiver are based on whether "the project is likely to cause no damage to the environment" and "ample and unconstrained infrastructure facilities exist to support the project" (301 CMR 11.11(3)). Dam removal projects like this one restore natural ecological function and maximize environmental benefit. The basis of this waiver request is founded upon the extensive data collection and analysis of environmental impacts that have been conducted in support of this project to date. These analyses support the overwhelming environmental benefit of the project, (*comment i-1*) and have resulted in the development of strategies to minimize and avoid negative environmental impacts as discussed in the alternatives analysis. This project is also supported by experts from the Massachusetts Division of Ecological Restoration who have decades of restoration experience. (*comment i-1*) i-1 i-1

This project triggers mandatory EIR under 301 CMR 11.03(3)(a)4: *structural alteration of an existing dam that causes and expansion of 20% or any decrease in impoundment capacity*. The dam is a run-of-river dam and does not provide any flood storage, nor does it currently provide any recreational use. Removal of the dam will restore the natural and historical ecological function of the associated brook, which is a MassWildlife-certified Coldwater Fishery Resource and falls within the Schenob Brook Area of Critical Environmental Concern. Dam removal has many environmental benefits, including improved water quality, restoration of natural sediment and nutrient transport regimes, improvement to aquatic habitat, aquatic species passage, creation of wetlands, and increased floodplain connectivity. (*comment i-1*) i-1

The permitting associated with this project will enable additional public and regulator input as well as provide a mechanism for application of conditions to ensure compliance with various laws and regulations. This project will require a 401 Water Quality Certificate (Department of Environmental Protection), Massachusetts Wetlands

Protection Act Order of Conditions (Mt. Washington Conservation Commission), Section 106 Historical Certificate (Mass Historic and other signatories), and Section 404 dredge and fill permit (U.S. Army Corps of Engineers).

The Becker Pond Dam Removal Project will have many environmental and community benefits. On behalf of the dam owner and its restoration partners, I urge you to favorably consider this waiver request. If you have any questions, please don't hesitate to contact me, Alison Dixon at adixon@hvatoday.org.

Sincerely,

Alison Dixon
HVA - Berkshire Outreach Manager
14 Main Street
Stockbridge, MA 01262
adixon@hvatoday.org

I would like to give all concerned my input on the removal of the Becker pond dam by the Nature
Conservancy. The Dam was built by William Hunt eighty years ago. The pond is spring fed and has many 9-1
pools upstream harboring endangered species of amphibians and plant life. The pond itself is a breeding
ground for native brook trout, newt salamanders which breed on the dam itself yearly. Also spotted
salamanders, wood ducks, kingfishers, blue herons, variety of owls. (*comment 9-1*) The pond is located a
good half of a mile off east street and was owned by the Dombrowski family for three generations , It 9-2
was recently sold to the Nature Conservancy thinking it would be kept intact. (*comment 9-2*)The family
held on to the house and a small parcel of land which also holds the access road to pond. In recent times
we have granted the Nature Conservancy permission to walk this road to do studies and for their
voluntary work crews etc. Last year their intent removing the dam was given and they were told they 9-3
could not use the road for the removal of the dam. It now looks like they are intending on building a
alternative road through Nature Conservancy property south of the existing road. (*comment 9-3*) Becker 9-1
Pond is a thriving Ecosystem that should not be eliminated ,especially by the Nature Conservancy .
(*comment 9-1*) If we had known that this was their intent we never would have sold this property to
them . To all concerned residents ,please feel free to take a viewing of Becker Pond and experience
something that will never be able to replaced. I am available to be contacted for more information Ted
Dombrowski 413 528 8090

Henry Sweren
President – Taconic Chapter

June 24, 2020

Secretary Kathleen Theoharides
Executive Office of Environmental Affairs
Attention: MEPA Office
100 Cambridge Street Suite 900
Boston, MA 02114

RE: **MEPA File #: 16226**
Becker Pond Dam Removal Project

Dear Secretary Theoharides:

The Massachusetts/Rhode Island (MA/RI) Council of Trout Unlimited is comprised of 11 chapters of dedicated volunteer cold-water conservationists. Our membership numbers in the two states exceed 4,000 individuals. These good folks have in recent years, among other efforts, undertaken projects to conserve nearly 2 miles of wild brook trout habitat in Heath and Westport, Massachusetts; identify and track wild trout populations in the Deerfield River watershed; and, remove dams and restore coaster brook trout populations on Red Brook in southeastern Massachusetts. In short, we know a good cold-water conservation project when we see it!

I am the President of the Taconic Chapter, which works to protect and conserve cold-water resources in the most western reaches of Massachusetts. Our chapter strongly supports the request for a waiver of an Environmental Impact Report (EIR) under 301 CMR 11.11(5) for the Becker Pond Dam Removal Project in Mt. Washington, Berkshire County, Massachusetts. Removal of the dam will restore fish passage and wildlife habitat, while also removing a public safety hazard. (*comment i-2*) i-2

As you know, the Secretary may waive an EIR if preparation of the EIR would result in “undue hardship” to the project proponent or would “not serve to avoid or minimize damage to the environment” as described under 301 CMR 11.11(1). Furthermore, we understand that when mandatory EIR review thresholds have been exceeded, the Secretary may grant a waiver of the EIR as described under 301 CMR 11.11(2) based on determination that preparation of an EIR would not provide increased benefit to the project and the environment.

Based upon the scientific and engineering analysis included in the EENF, preparation of an EIR for this project would not serve to avoid or minimize damage to the environment, nor would its preparation provide increased benefit to the project and the environment for reasons listed below.

i-1

Determinations for an EIR Waiver are based on whether “the project is likely to cause no damage to the environment” and “ample and unconstrained infrastructure facilities exist to support the project” (301 CMR 11.11(3)). Dam removal projects like this one restore natural ecological function and maximize environmental benefit. (*comment i-1*) The basis of this waiver request is founded upon the extensive data collection and analysis of environmental impacts that have been conducted in support of this project to date. These analyses support the overwhelming environmental benefit of the project and have resulted in the development of strategies to minimize and avoid negative environmental impacts as discussed in the alternatives analysis. This project is also supported by experts from the Massachusetts Division of Ecological Restoration who have decades of restoration experience.

i-1

This project triggers mandatory EIR under 301 CMR 11.03(3)(a)4: *structural alteration of an existing dam that causes an expansion of 20% or any decrease in impoundment capacity*. The dam is a run-of-river dam and does not provide any flood storage, nor does it currently provide any recreational use. Removal of the dam will restore the natural and historical ecological function of the associated brook, which is a MassWildlife-certified Coldwater Fishery Resource and falls within the Shenob Brook Area of Critical Environmental Concern. Dam removal has many environmental benefits, including improved water quality, restoration of natural sediment and nutrient transport regimes, improvement to aquatic habitat, aquatic species passage, creation of wetlands, and increased floodplain connectivity. (*comment i-1*)

The permitting associated with this project will enable additional public and regulator input as well as provide a mechanism for application of conditions to ensure compliance with various laws and regulations. This project will require a 401 Water Quality Certificate (Department of Environmental Protection), Massachusetts Wetlands Protection Act Order of Conditions (Mt. Washington Conservation Commission), Section 106 Historical Certificate (Mass Historic and other signatories), and Section 404 dredge and fill permit (U.S. Army Corps of Engineers).

The Becker Pond Dam Removal Project will have many environmental and community benefits. Requiring an EIR will serve only to duplicate environmental protection measures enveloped in the permits for this project. On behalf of Trout Unlimited, we ask that you waive the EIR requirement and allow this cold-water conservation project to move forward swiftly.

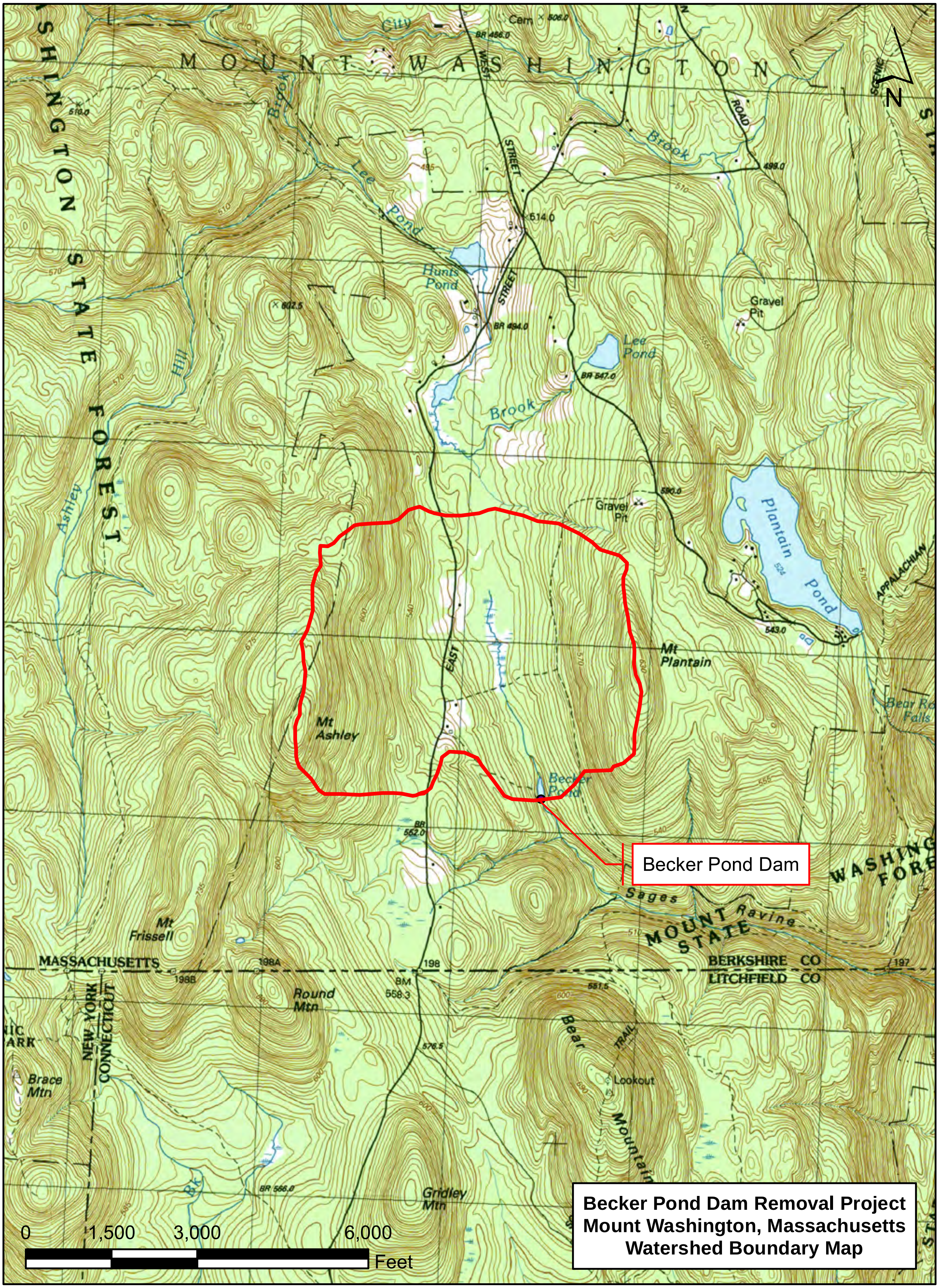
If you have any questions, please don’t hesitate to contact Henry Sweren at (413)822-5216 or hsweren8@aol.com

Sincerely,
Henry Sweren, President
Taconic Chapter – Trout Unlimited

Attachment C

Becker Pond Dam Removal Project
Mt Washington, MA
SEIR - EEA File #16226

LOCUS MAP & SITE PLANS



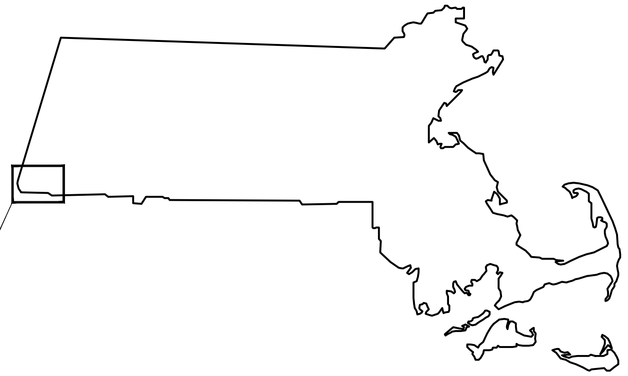
Becker Pond Dam Removal Project
Mount Washington, Massachusetts
Watershed Boundary Map

1. USGS Topo Map courtesy of MassGIS.

BECKER POND DAM REMOVAL

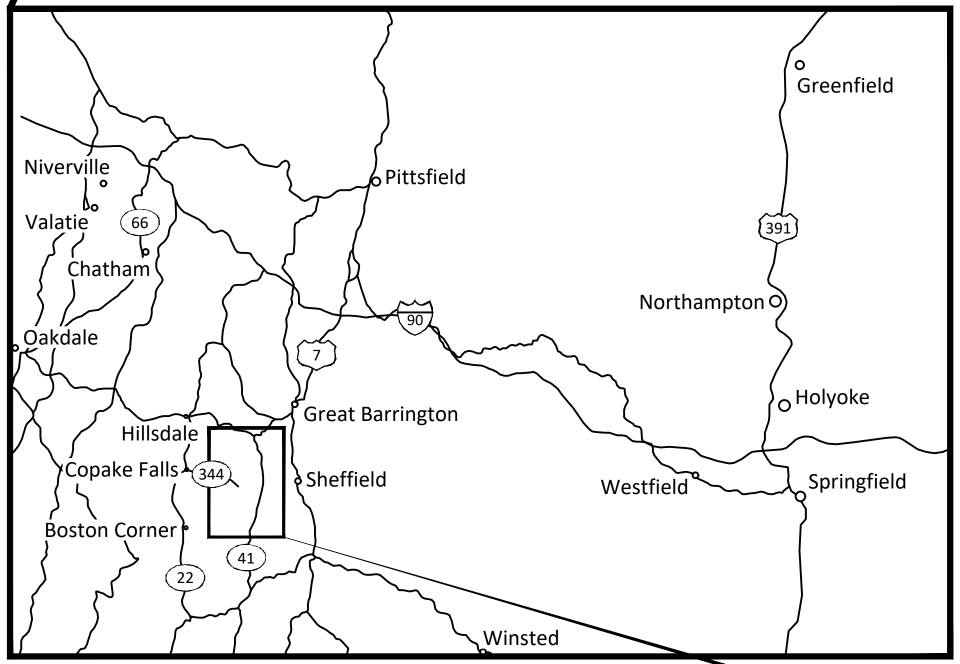
75% DESIGN PLANS

SEPTEMBER 4, 2020



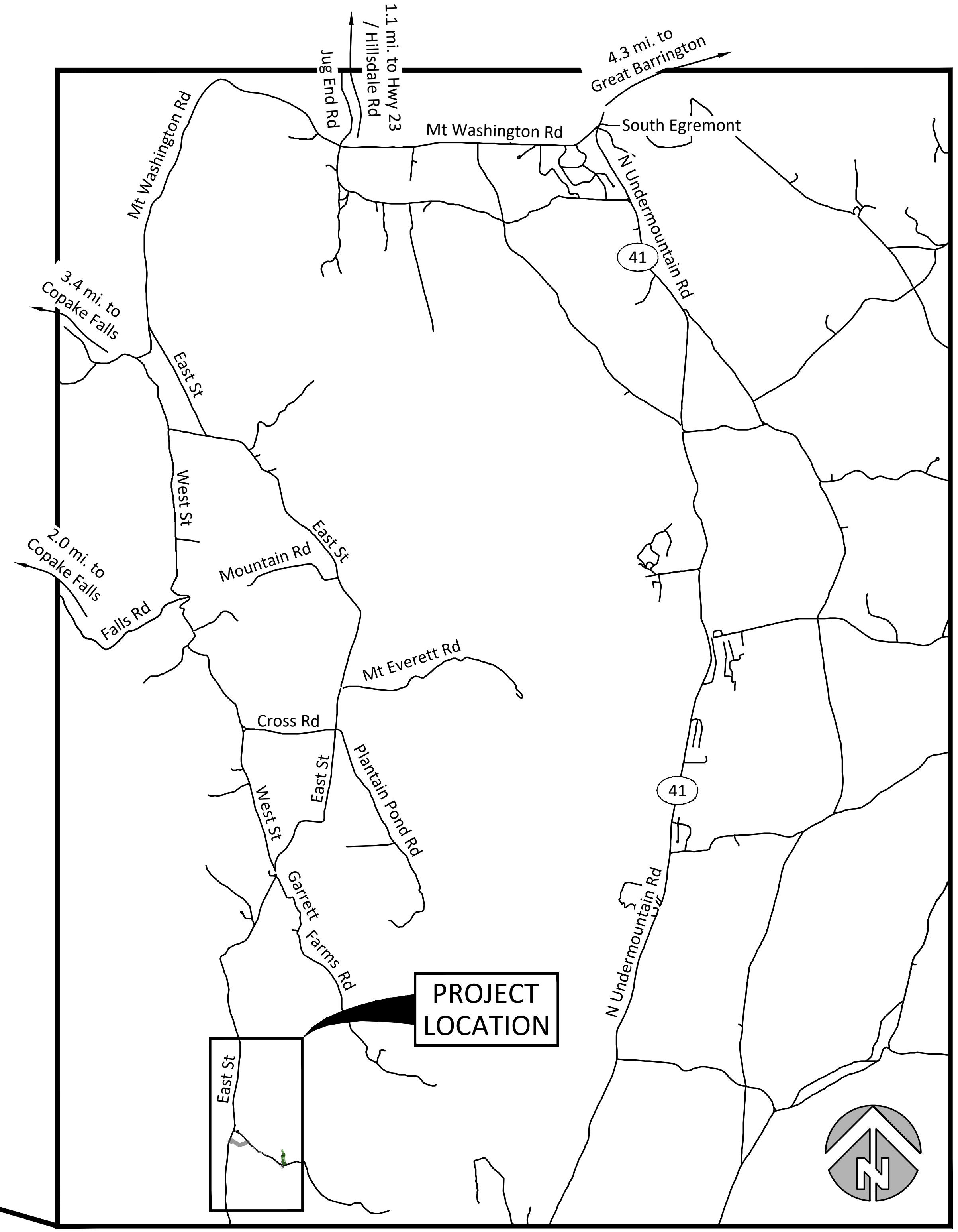
LOCATION MAP
STATE OF MASSACHUSETTS

NOT TO SCALE



VICINITY MAP

SCALE: 1" = 15 MI.



SITE MAP

SCALE: 1" = 1 MI.

SHEET LIST

1. Cover, Location and Sheet List
2. Existing Conditions, Ownership, and Survey Control
3. Access and Staging, Erosion and Sediment Control
4. Existing Conditions
5. Dam Removal Plan and Profile STA 1+50 to STA 2+75
6. Pilot Channel Plan and Profile STA 2+75 to STA 5+75
7. Pilot Channel Plan and Profile STA 5+75 to STA 8+00
8. Dam Removal Grading Cross Sections
9. Dam Removal Grading Cross Sections and Details
10. Pilot Channel Grading Cross Sections
11. Resource Area Impacts

COORDINATES:

LATITUDE	42°03'29.88" N
LONGITUDE	73°27'33.12" W

MOUNT WASHINGTON, BERKSHIRE
COUNTY, MASSACHUSETTS

WATERBODY:	BECKER POND
TRIBUTARY OF:	SHENOB BROOK AND HOUSATONIC RIVER

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NO.	BY	DATE	REVISION DESCRIPTION

DF,SW,SJ	NN,SW	CC
DRAWN	DESIGNED	CHECKED
SW	9/4/2020	18-05-01
APPROVED	DATE	PROJECT

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BERKSHIRE COUNTY, MASSACHUSETTS

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COVER, LOCATION
AND SHEET LIST

SHEET

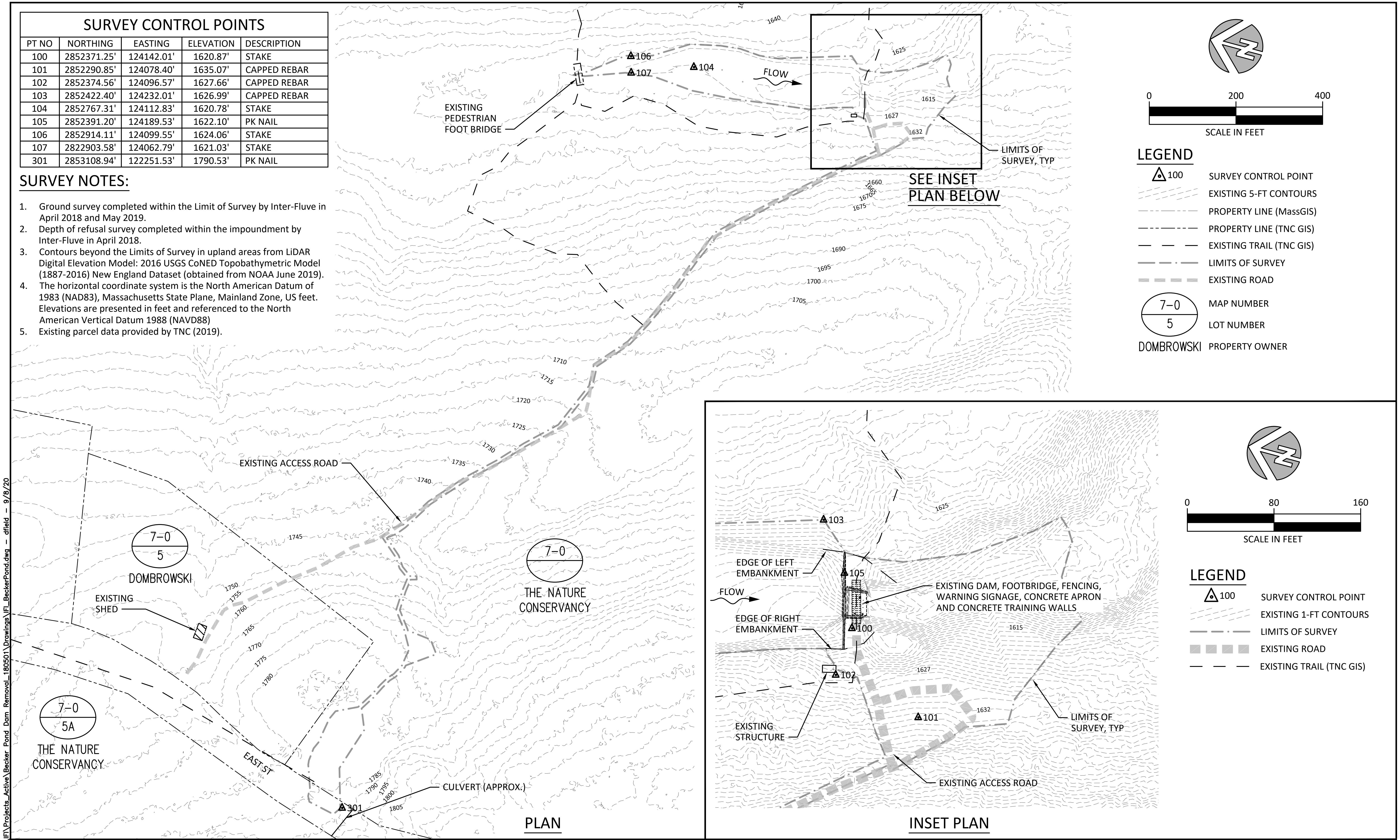
1 OF 11

SURVEY CONTROL POINTS

PT NO	NORTHING	EASTING	ELEVATION	DESCRIPTION
100	2852371.25'	124142.01'	1620.87'	STAKE
101	2852290.85'	124078.40'	1635.07'	CAPPED REBAR
102	2852374.56'	124096.57'	1627.66'	CAPPED REBAR
103	2852422.40'	124232.01'	1626.99'	CAPPED REBAR
104	2852767.31'	124112.83'	1620.78'	STAKE
105	2852391.20'	124189.53'	1622.10'	PK NAIL
106	2852914.11'	124099.55'	1624.06'	STAKE
107	2822903.58'	124062.79'	1621.03'	STAKE
301	2853108.94'	122251.53'	1790.53'	PK NAIL

SURVEY NOTES:

1. Ground survey completed within the Limit of Survey by Inter-Fluve in April 2018 and May 2019.
2. Depth of refusal survey completed within the impoundment by Inter-Fluve in April 2018.
3. Contours beyond the Limits of Survey in upland areas from LiDAR Digital Elevation Model: 2016 USGS CoNED Topobathymetric Model (1887-2016) New England Dataset (obtained from NOAA June 2019).
4. The horizontal coordinate system is the North American Datum of 1983 (NAD83), Massachusetts State Plane, Mainland Zone, US feet. Elevations are presented in feet and referenced to the North American Vertical Datum 1988 (NAVD88)
5. Existing parcel data provided by TNC (2019).



PLAN

0 200 400
SCALE IN FEET

LEGEND

△100	SURVEY CONTROL POINT
	EXISTING 5-FT CONTOURS
	PROPERTY LINE (MassGIS)
	PROPERTY LINE (TNC GIS)
— — —	EXISTING TRAIL (TNC GIS)
	LIMITS OF SURVEY
	EXISTING ROAD
7–0	MAP NUMBER
5	LOT NUMBER
DOMBROWSKI	PROPERTY OWNER

INSET PLAN

0 80 160
SCALE IN FEET

LEGEND

△100	SURVEY CONTROL POINT
	EXISTING 1-FT CONTOURS
	LIMITS OF SURVEY
	EXISTING ROAD
— — —	EXISTING TRAIL (TNC GIS)

NO.	BY	DATE	REVISION DESCRIPTION

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SW APPROVED	9/4/2020 DATE	18-05-01 PROJECT

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EXISTING CONDITIONS, OWNERSHIP, AND SURVEY CONTROL

SHEET
2 OF 11

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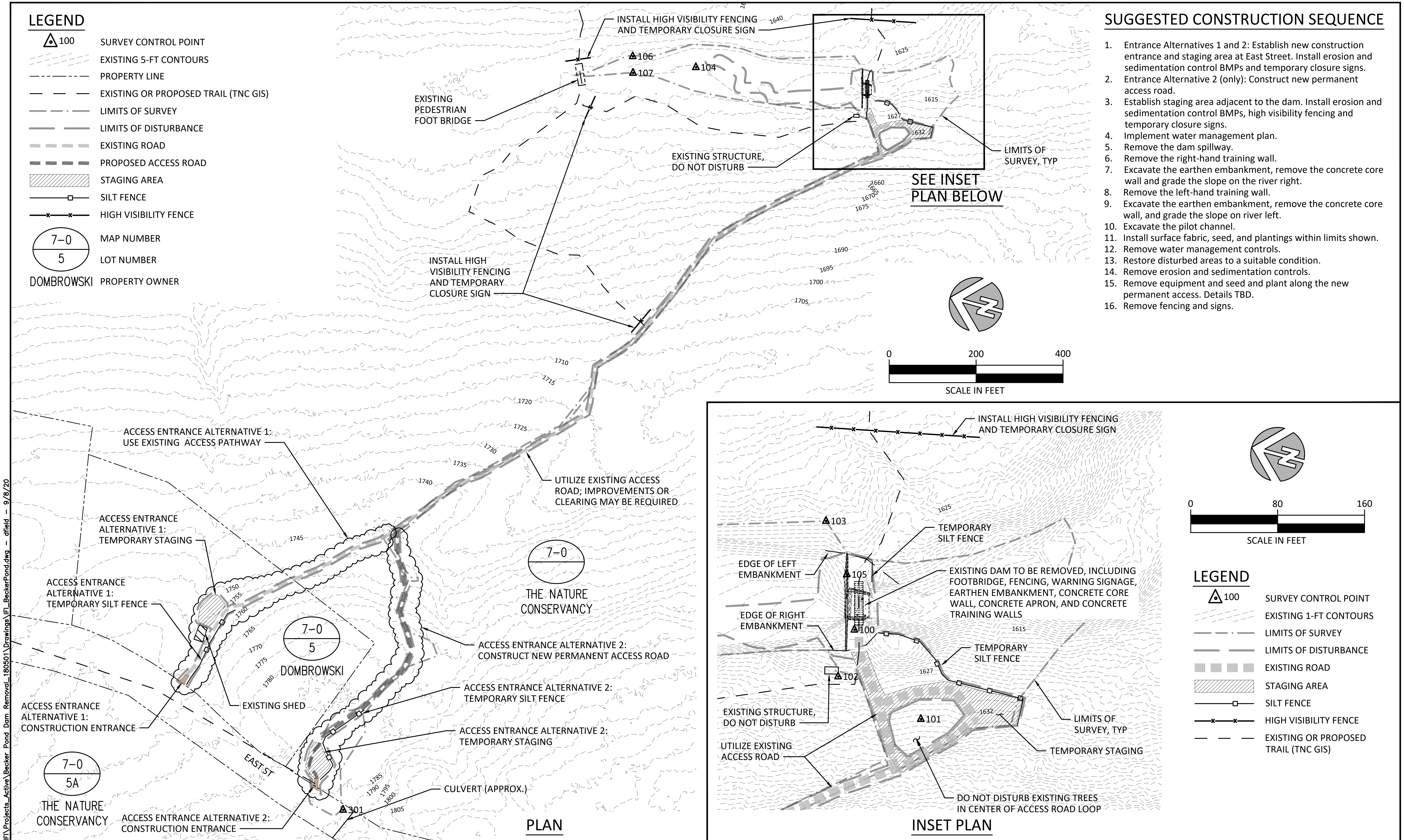
LEGEND

△100 SURVEY CONTROL POINT
EXISTING 5-FT CONTOURS
PROPERTY LINE
EXISTING OR PROPOSED TRAIL (TNC GIS)
LIMITS OF SURVEY
LIMITS OF DISTURBANCE
EXISTING ROAD
PROPOSED ACCESS ROAD
▨ STAGING AREA
SILT FENCE
HIGH VISIBILITY FENCE
7–0 MAP NUMBER
5 LOT NUMBER
DOMBROWSKI PROPERTY OWNER

SUGGESTED CONSTRUCTION SEQUENCE

1. Entrance Alternatives 1 and 2: Establish new construction entrance and staging area at East Street. Install erosion and sedimentation control BMPs and temporary closure signs.
2. Entrance Alternative 2 (only): Construct new permanent access road.
3. Establish staging area adjacent to the dam. Install erosion and sedimentation control BMPs, high visibility fencing and temporary closure signs.
4. Implement water management plan.
5. Remove the dam spillway.
6. Remove the right-hand training wall.
7. Excavate the earthen embankment, remove the concrete core wall and grade the slope on the river right.
8. Remove the left-hand training wall.
9. Excavate the earthen embankment, remove the concrete core wall, and grade the slope on river left.
10. Excavate the pilot channel.
11. Install surface fabric, seed, and plantings within limits shown.
12. Remove water management controls.
13. Restore disturbed areas to a suitable condition.
14. Remove erosion and sedimentation controls.
15. Remove equipment and seed and plant along the new permanent access. Details TBD.
16. Remove fencing and signs.



LEGEND

△100 SURVEY CONTROL POINT
EXISTING 1-FT CONTOURS
LIMITS OF SURVEY
LIMITS OF DISTURBANCE
EXISTING ROAD
▨ STAGING AREA
SILT FENCE
HIGH VISIBILITY FENCE
EXISTING OR PROPOSED TRAIL (TNC GIS)

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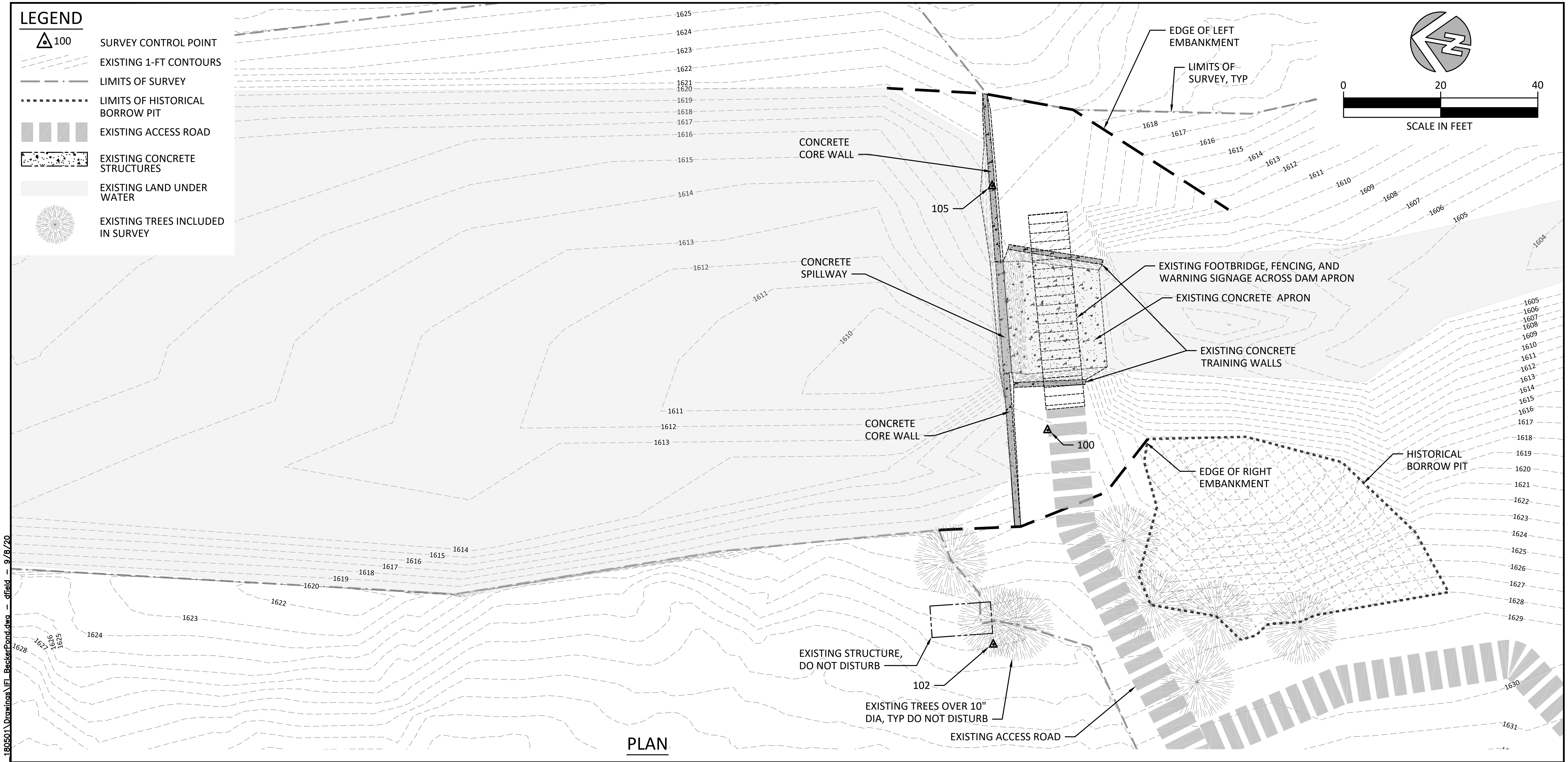
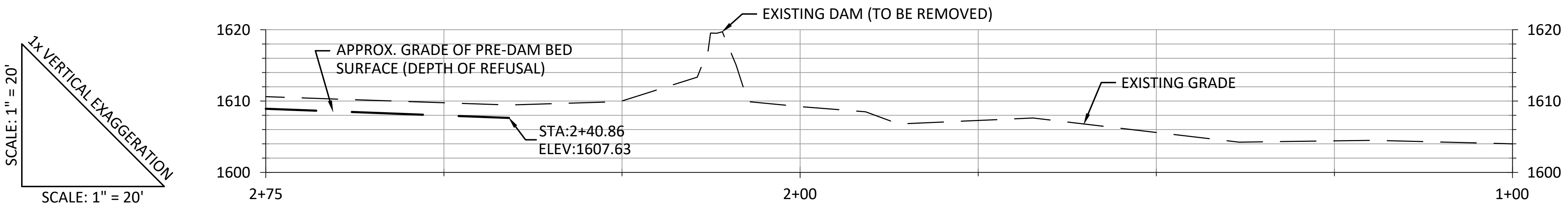
ACCESS AND STAGING, EROSION AND SEDIMENT CONTROL

SHEET
3 OF 11



PLAN



LONGITUDINAL PROFILE - THALWEG STA 1+00 to STA 2+75

NO.	BY	DATE	REVISION DESCRIPTION

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DATE
18-05-01
PROJECT

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EXISTING CONDITIONS

SHEET
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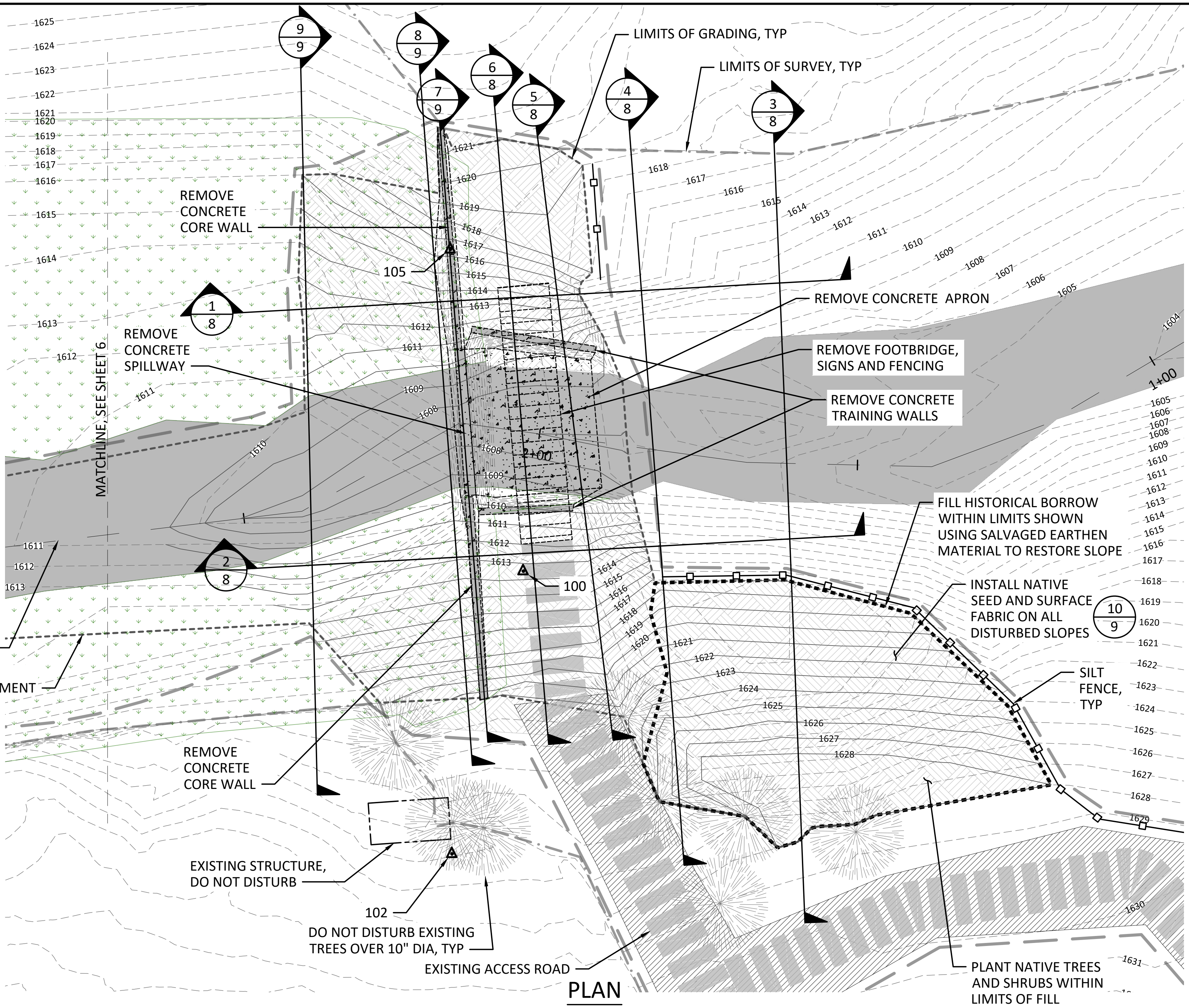
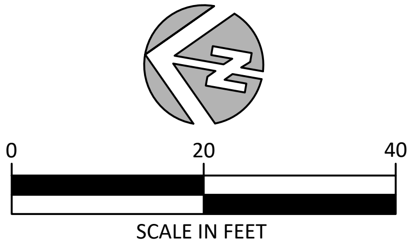
NOTES:

1. REMOVE FULL LATERAL AND VERTICAL EXTENTS OF THE FOLLOWING DAM COMPONENTS: CONCRETE CORE WALL, CONCRETE TRAINING WALLS, CONCRETE APRON, AND ALL ASSOCIATED APPURTANCES. DISPOSE OF CONCRETE OFF SITE.
2. THE FULL LATERAL AND VERTICAL EXTENTS OF SUBSURFACE FEATURES INCLUDING THE CONCRETE CORE WALL ARE NOT KNOWN AT THIS TIME.
3. REMOVE THE EARTHEN EMBANKMENT AS SHOWN IN THE PROPOSED GRADING.
4. REUSE SALVAGED EARTHEN MATERIAL ON-SITE. FILL HISTORICAL BORROW PIT, IDENTIFIED ON THIS PLAN.
5. GRADE BANKS AND CHANNEL AS SHOWN FROM DOWNSTREAM LIMIT OF DISTURBANCE TO STATION 1+83, SEE 9/9
6. FOR PILOT CHANNEL GRADING FROM STATION 1+83 TO POINTS UPSTREAM, EXCAVATE PILOT CHANNEL WITHIN LIMIT OF DISTURBANCE. PILOT EXCAVATION SHOULD BE FROM THE DEPTH OF REFUSAL AT THE ASSUMED THALWEG, WITH SIDE SLOPES AT APPROXIMATELY 6:1 TO EXISTING BED AND A MAXIMUM TOP WIDTH OF APPROXIMATELY 23 FEET. IF HISTORIC NATIVE CHANNEL MATERIAL IS ENCOUNTERED, IT SHALL REMAIN IN PLACE.
7. STOCKPILE EXCAVATED SEDIMENT FOR POTENTIAL REUSE.
8. REMOVE AND DISPOSE OFF-SITE THE EXISTING FOOT BRIDGE, SIGNS, AND FENCING.
9. REFER TO SPECIFICATIONS FOR FILL REQUIREMENTS INCLUDING THE PREPARATION OF THE EXISTING SURFACE.
10. STAKE AND FLAG THE LIMIT OF DISTURBANCE FOR VISUAL IDENTIFICATION IN THE FIELD.

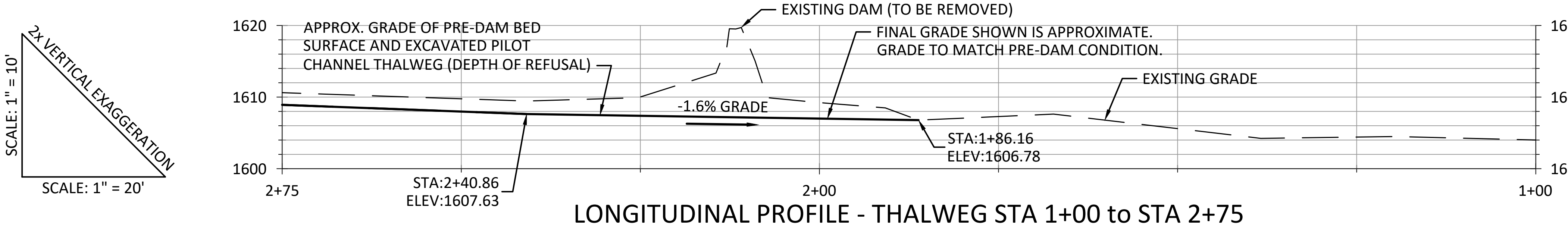


PLAN



LEGEND

┄┄┄	EXISTING 1-FT CONTOURS
───	PROPOSED 1-FT CONTOURS
─ · ─	LIMITS OF SURVEY
── ──	LIMITS OF DISTURBANCE
- - - -	ESTIMATED LIMIT OF GRADING
▨	EXISTING ACCESS ROAD
▨	TEMPORARY STAGING AND STOCKPILE AREA
▨	EXISTING CONCRETE STRUCTURES
▨	ANTICIPATED LAND UNDER WATER AFTER DAM REMOVAL
✳	EXISTING TREES
▨	PROPOSED SURFACE FABRIC INSTALLATION 10/9
─□─	TEMPORARY SILT FENCE
┅┅┅	APPROXIMATE FILL AREA BOUNDARY
✓ ✓ ✓	NATIVE SEED APPLICATION



LONGITUDINAL PROFILE - THALWEG STA 1+00 to STA 2+75

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DAM REMOVAL PLAN AND PROFILE STA 1+50 TO STA 2+75

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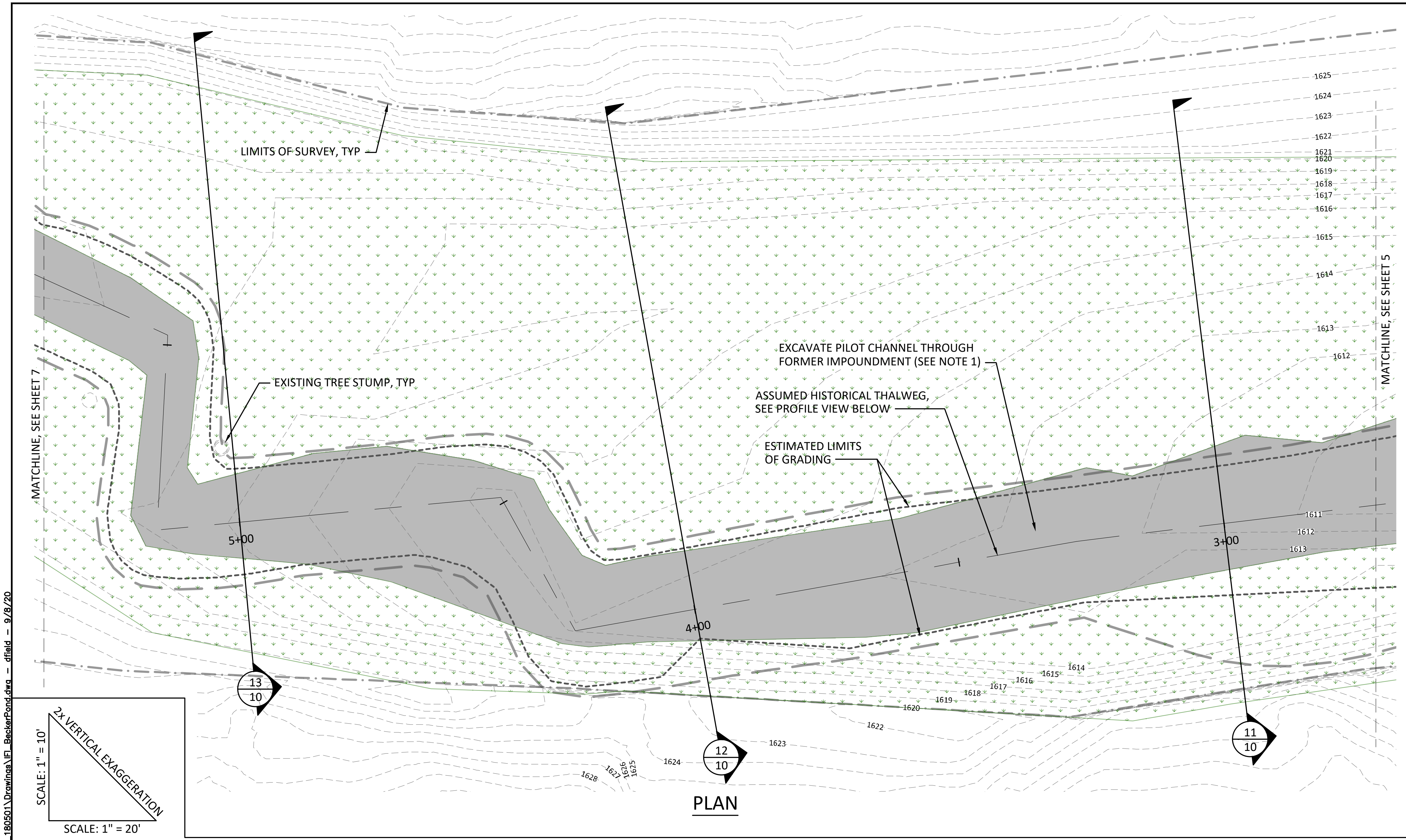
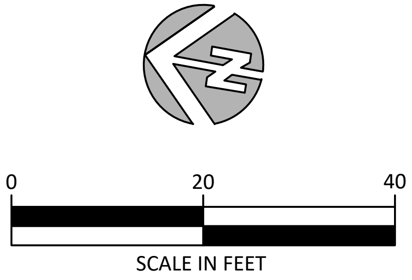


PLAN

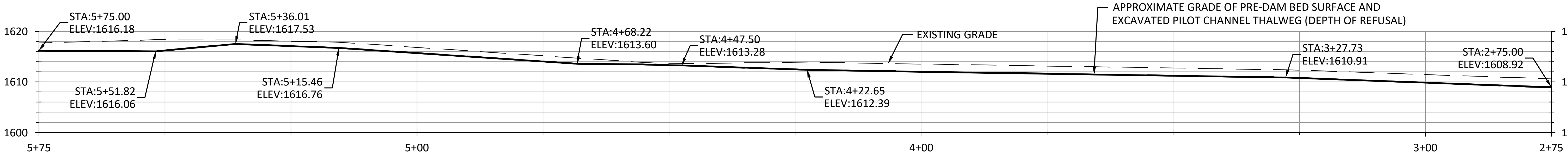


LEGEND

⋯	EXISTING 1-FT CONTOURS
⁄⁄	PROPOSED 1-FT CONTOURS
— · —	LIMITS OF SURVEY
— —	LIMITS OF DISTURBANCE
- - - -	ESTIMATED LIMIT OF GRADING
▨	ANTICIPATED LAND UNDER WATER AFTER DAM REMOVAL
🟩	NATIVE SEED APPLICATION

NOTES:

1. FOR PILOT CHANNEL GRADING, EXCAVATE PILOT CHANNEL WITHIN LIMIT OF DISTURBANCE. EXCAVATION SHOULD BE FROM THE DEPTH OF REFUSAL AT THE ASSUMED THALWEG, WITH SIDE SLOPES AT APPROXIMATELY 6:1 TO EXISTING BED WITH A MAXIMUM TOP WIDTH OF 23 FEET. IF HISTORIC NATIVE CHANNEL MATERIAL IS ENCOUNTERED, IT SHALL REMAIN IN PLACE.
2. STAKE AND FLAG LIMIT FOR DISTURBANCE FOR VISUAL IDENTIFICATION IN THE FIELD.



LONGITUDINAL PROFILE - THALWEG STA 2+75 to STA 5+75

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BECKER POND DAM REMOVAL
THE NATURE CONSERVANCY
BERKSHIRE COUNTY, MASSACHUSETTS

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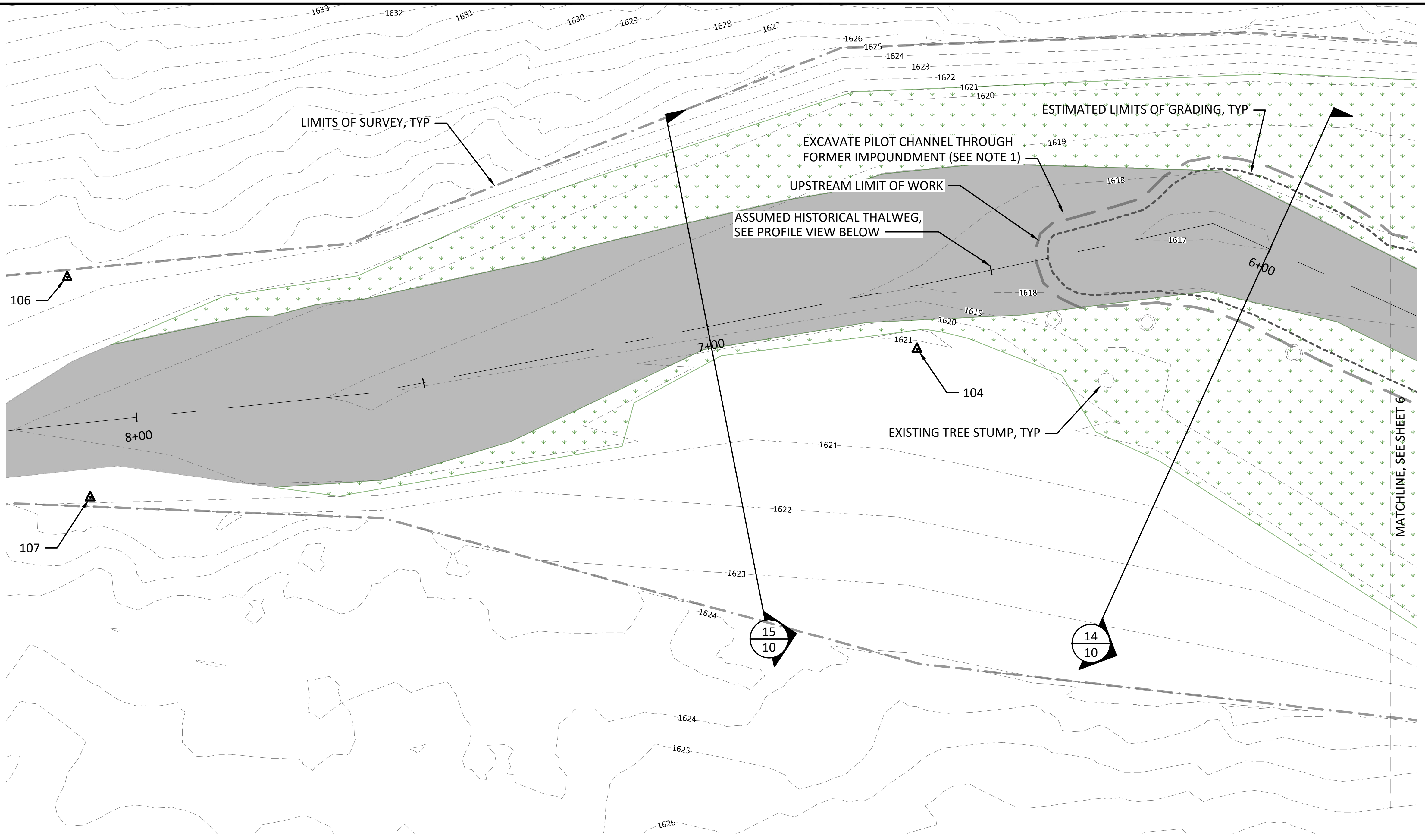
PILOT CHANNEL PLAN AND PROFILE STA 2+75 TO STA 5+75

SHEET
6 OF 11



PLAN

0 20 40

SCALE IN FEET

LEGEND

╱╱	EXISTING 1-FT CONTOURS
╱╱	PROPOSED 1-FT CONTOURS
— · —	LIMITS OF SURVEY
— —	LIMITS OF DISTURBANCE
- - - -	ESTIMATED LIMIT OF GRADING
▨	ANTICIPATED LAND UNDER WATER AFTER DAM REMOVAL
🟩	NATIVE SEED APPLICATION

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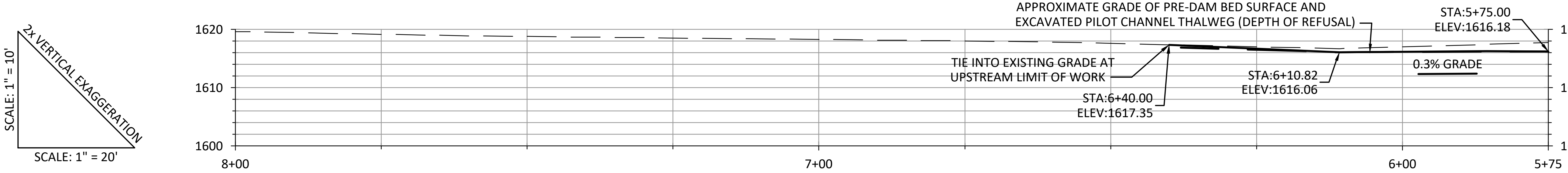
1. FOR PILOT CHANNEL GRADING, EXCAVATE PILOT CHANNEL WITHIN LIMIT OF DISTURBANCE. EXCAVATION SHOULD BE FROM THE DEPTH OF REFUSAL AT THE ASSUMED THALWEG, WITH SIDE SLOPES AT APPROXIMATELY 6:1 TO EXISTING BED WITH A MAXIMUM TOP WIDTH OF 23 FEET. IF HISTORIC NATIVE CHANNEL MATERIAL IS ENCOUNTERED, IT SHALL REMAIN IN PLACE.
2. STAKE AND FLAG LIMIT FOR DISTURBANCE FOR VISUAL IDENTIFICATION IN THE FIELD.



LONGITUDINAL PROFILE - THALWEG STA 5+75 to STA 8+00

NO.	BY	DATE	REVISION DESCRIPTION

DF,SW,SJ DRAWN	NN,SW DESIGNED	CC CHECKED
SW APPROVED	9/4/2020 DATE	18-05-01 PROJECT

BECKER POND DAM REMOVAL
THE NATURE CONSERVANCY
BERKSHIRE COUNTY, MASSACHUSETTS

inter·fluve

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PILOT CHANNEL PLAN AND PROFILE STA 5+75 TO STA 8+00

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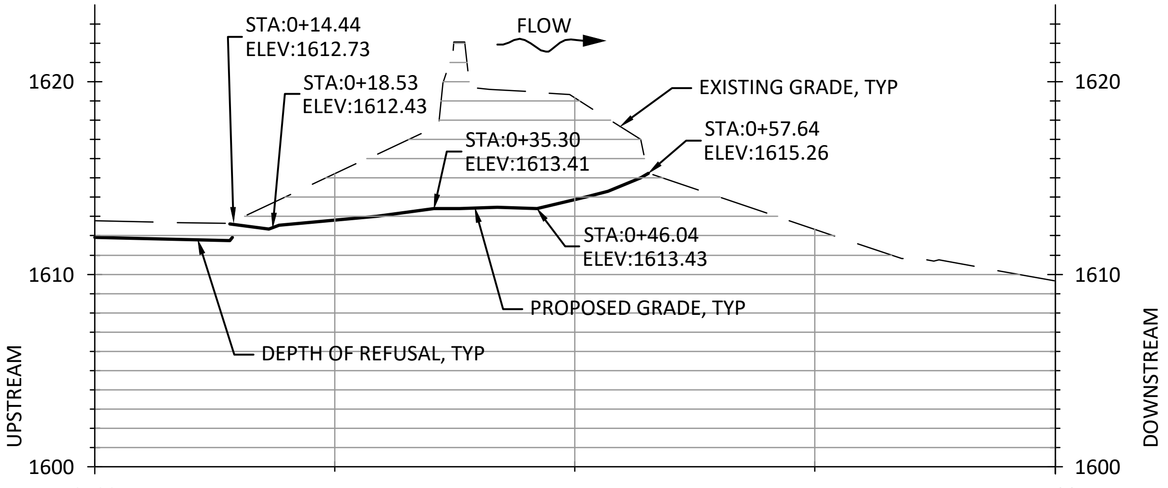

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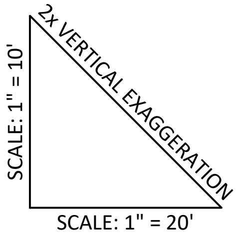

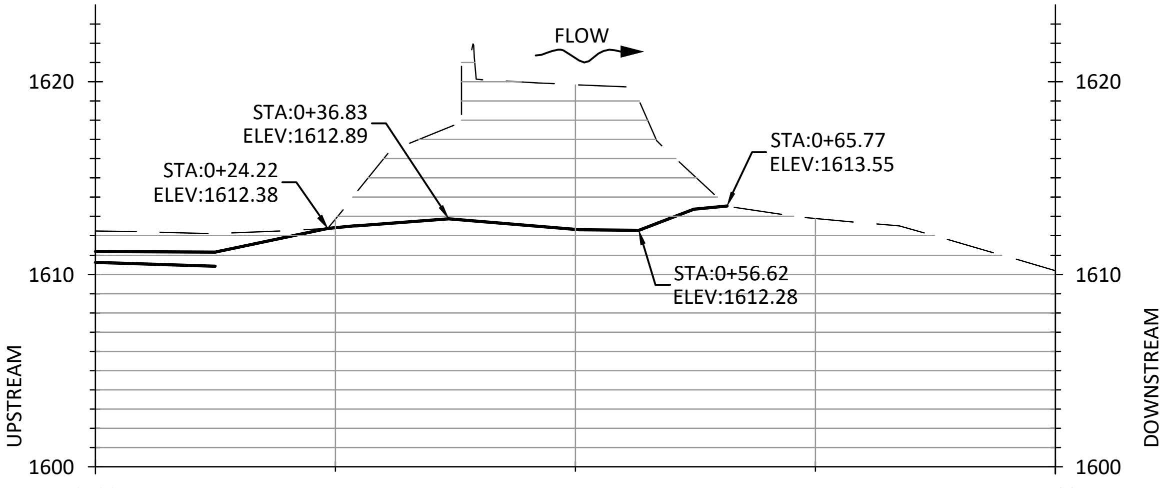

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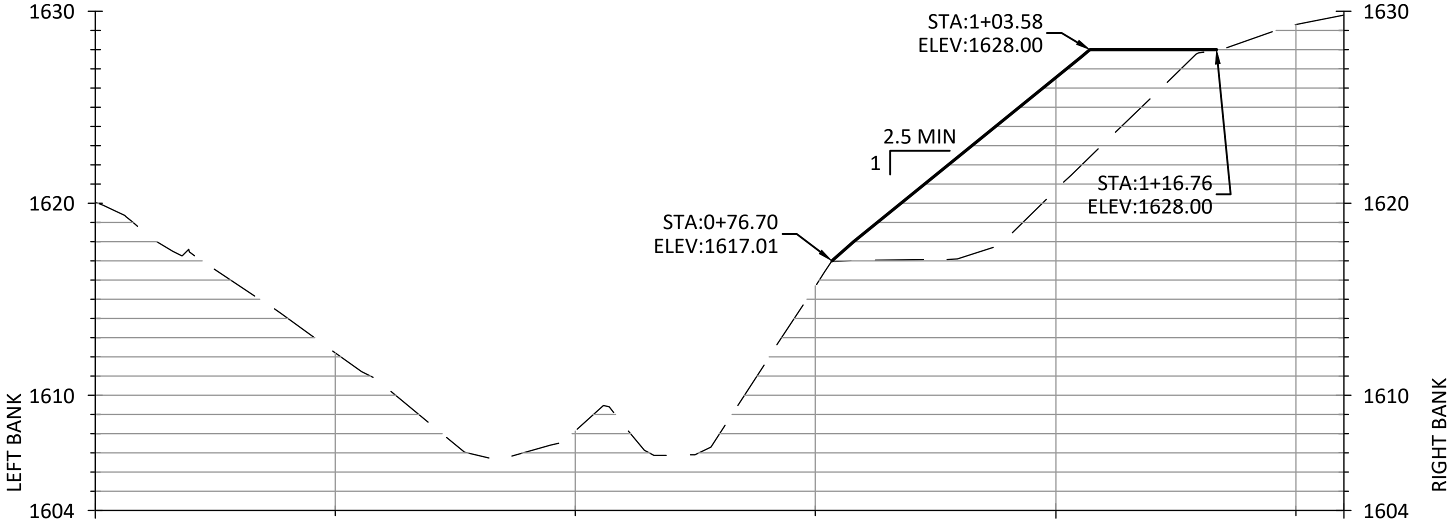

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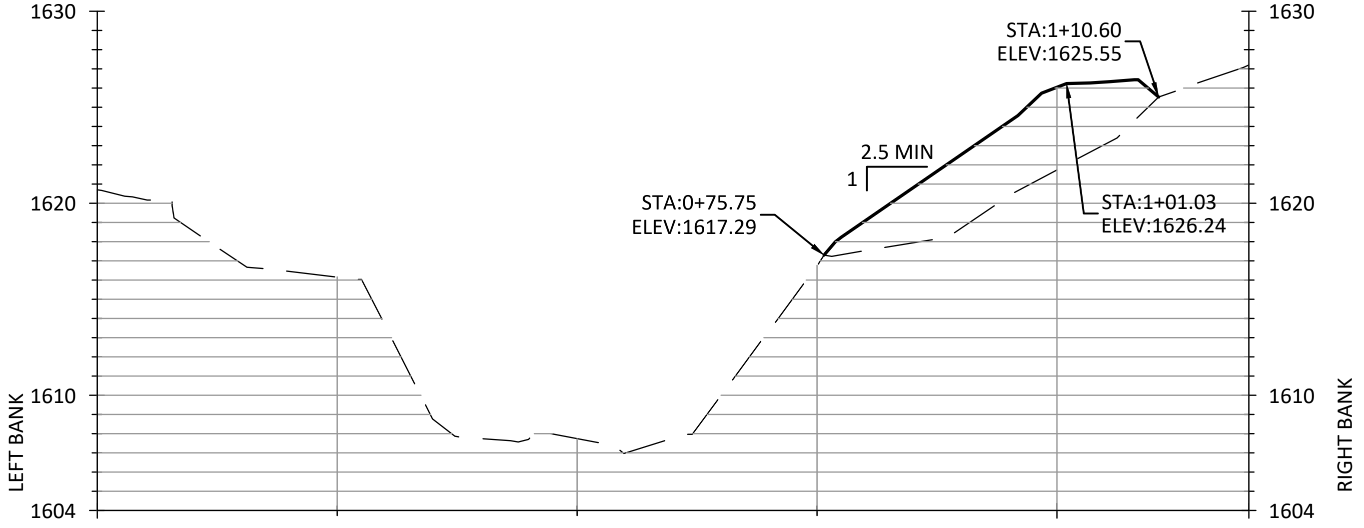

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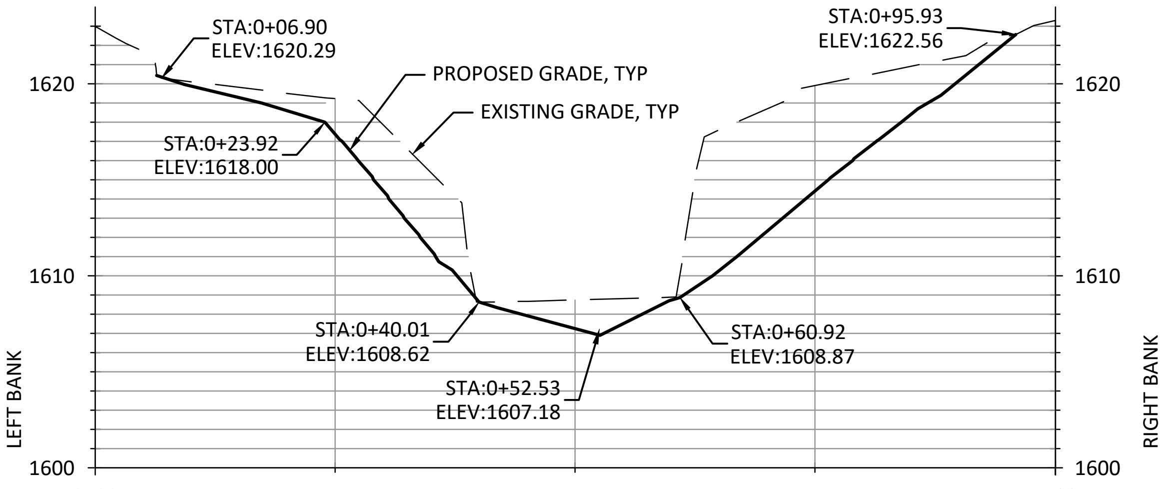

5/8 CROSS-SECTION AT STA 1+41

NOTES:

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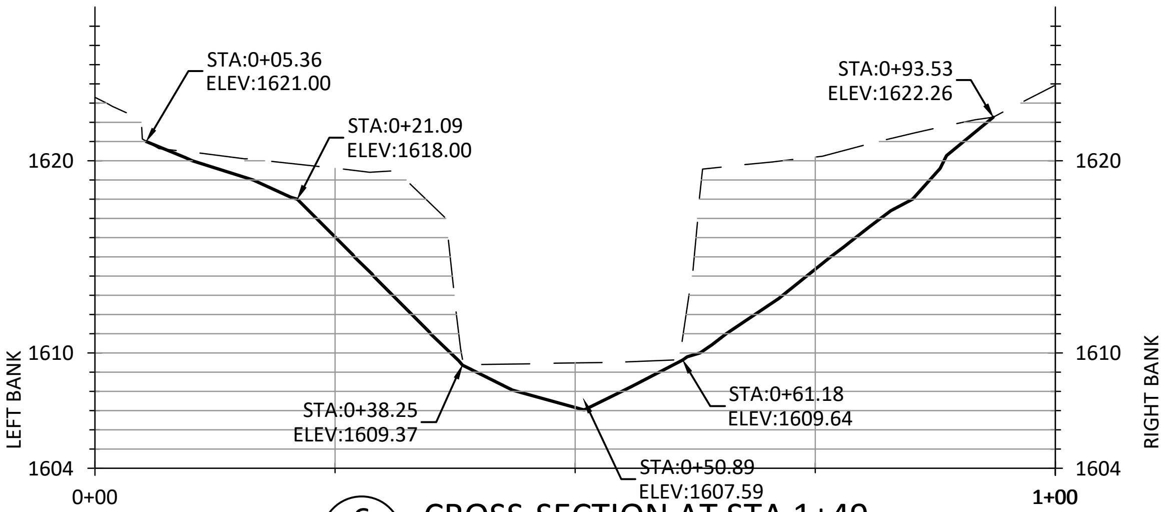

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DAM REMOVAL GRADING
CROSS SECTIONS

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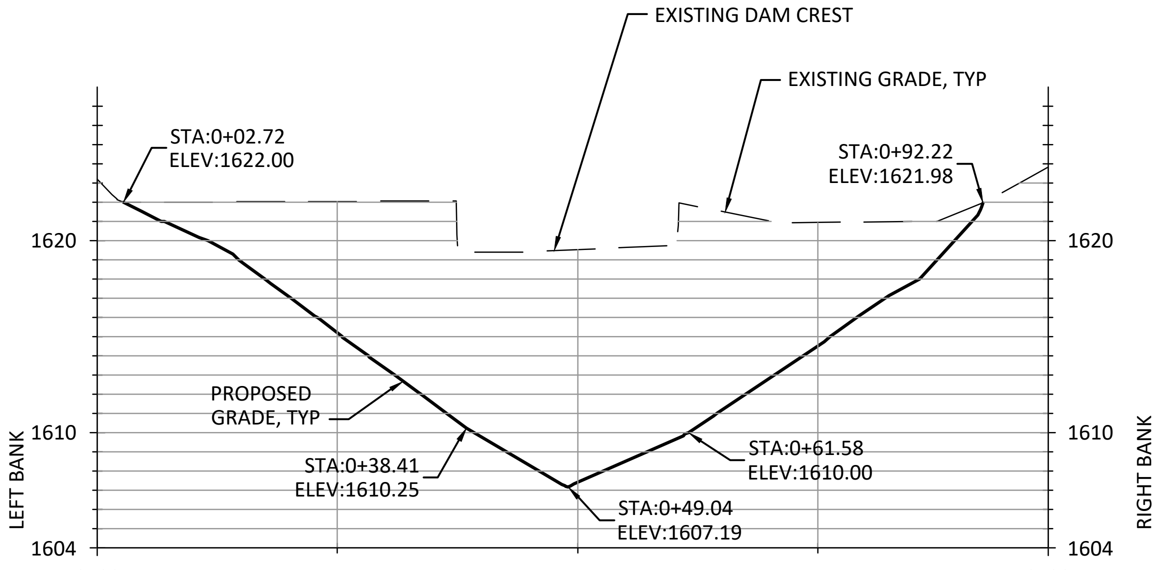

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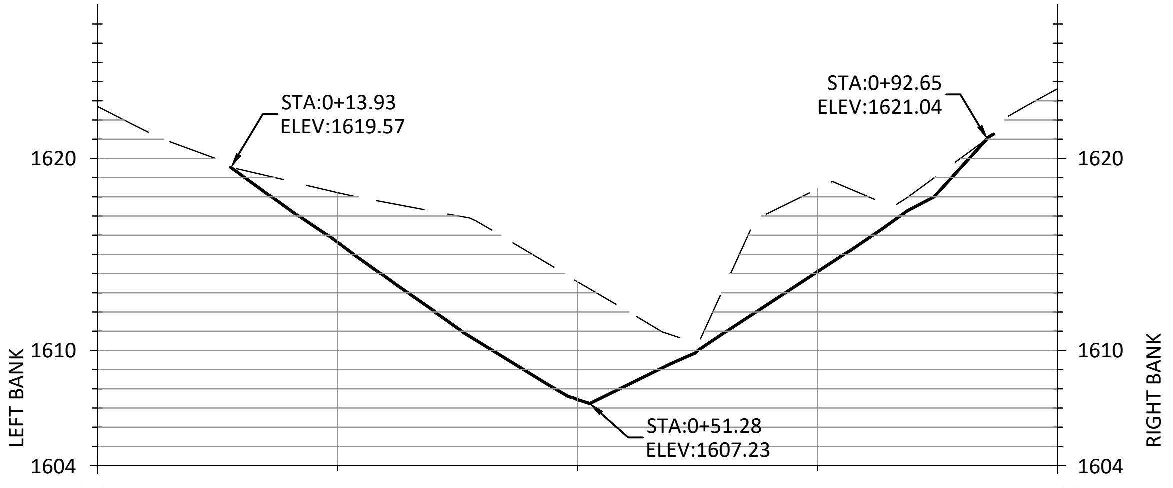
CROSS-SECTION AT STA 1+57



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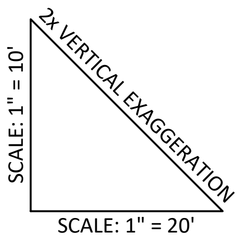
CROSS-SECTION AT STA 1+60



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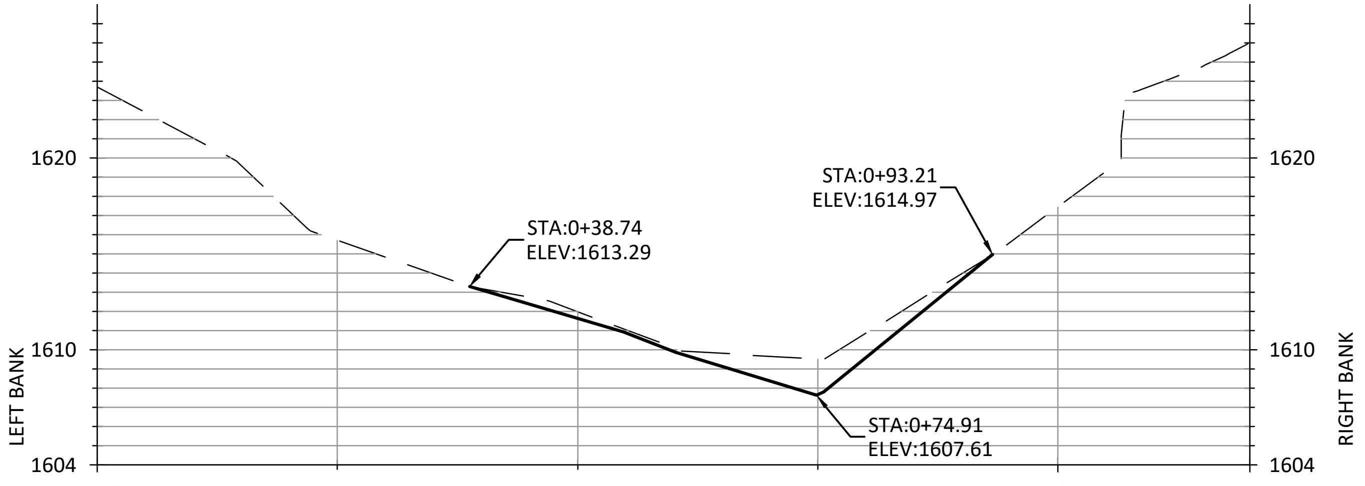

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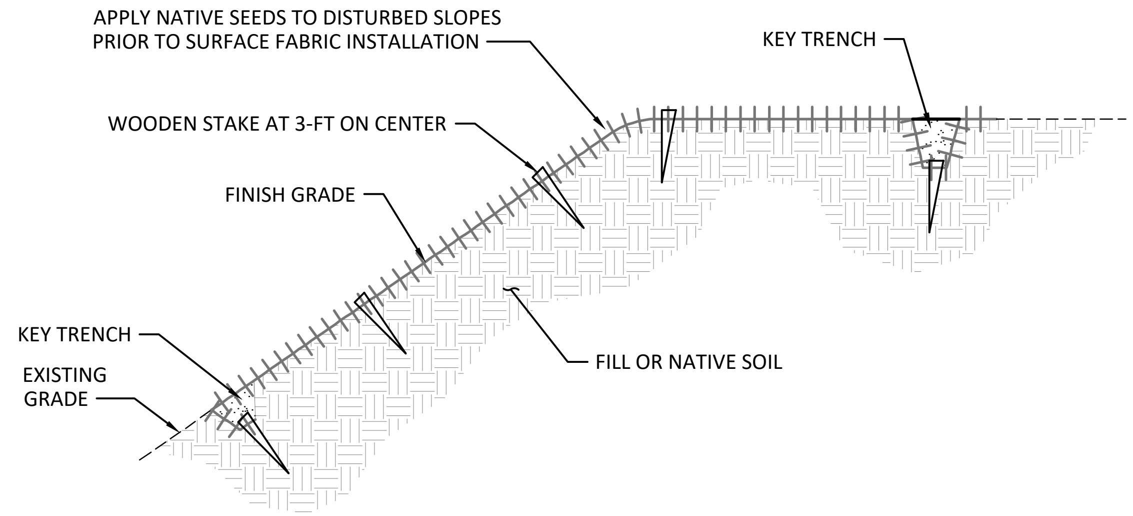

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TYPICAL SURFACE FABRIC TREATMENT
NOT TO SCALE

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DAM REMOVAL GRADING
CROSS SECTIONS AND DETAILS

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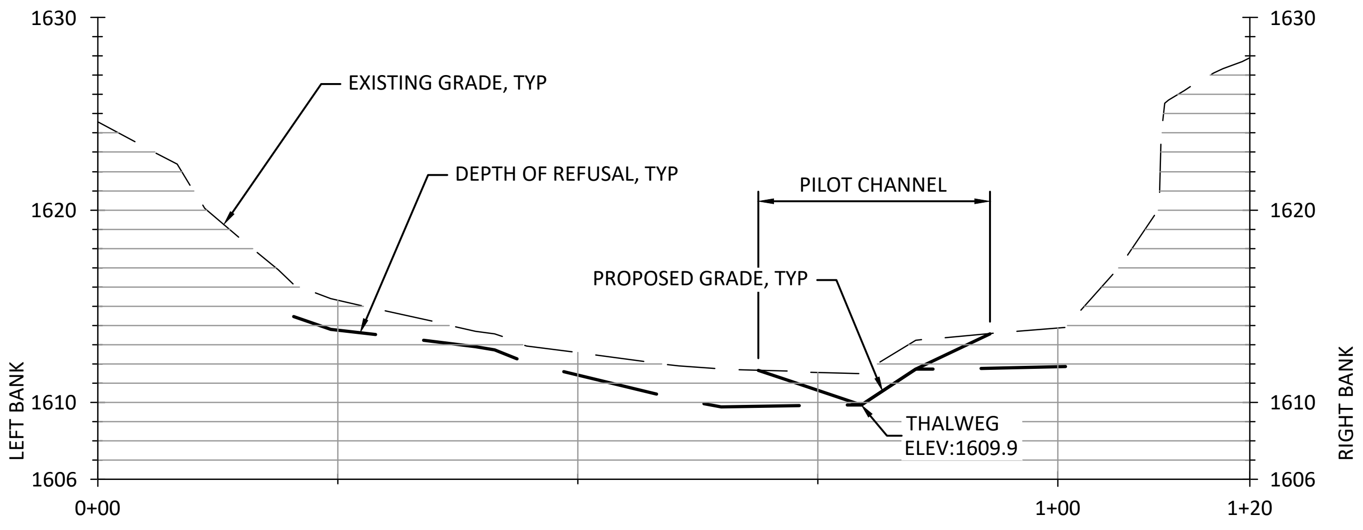

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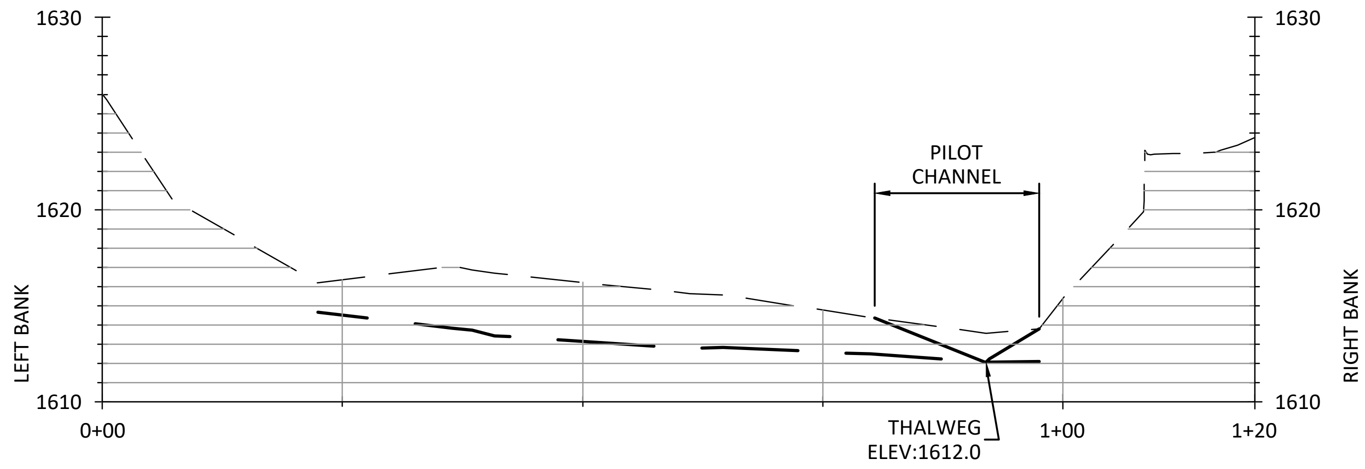

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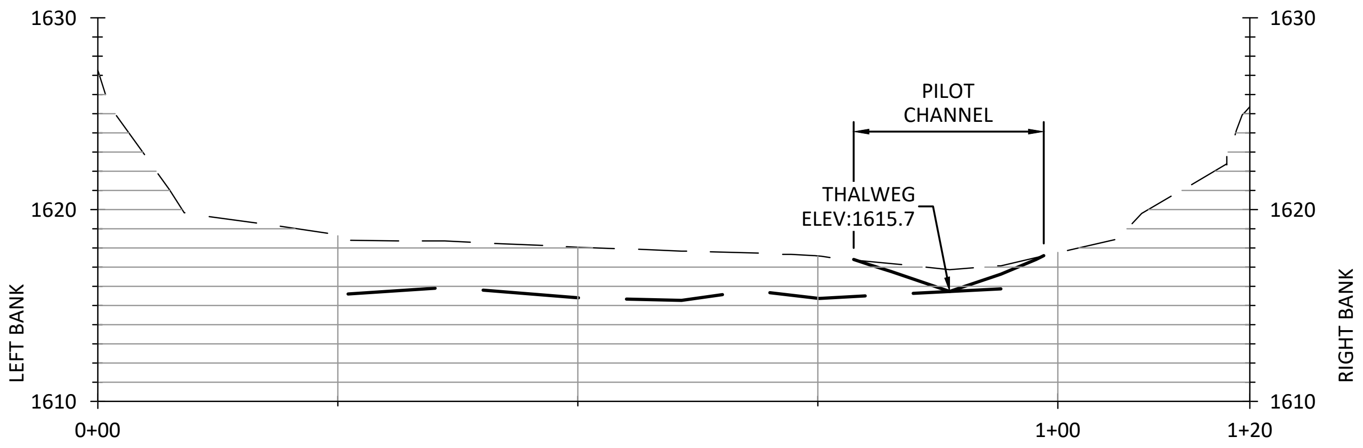

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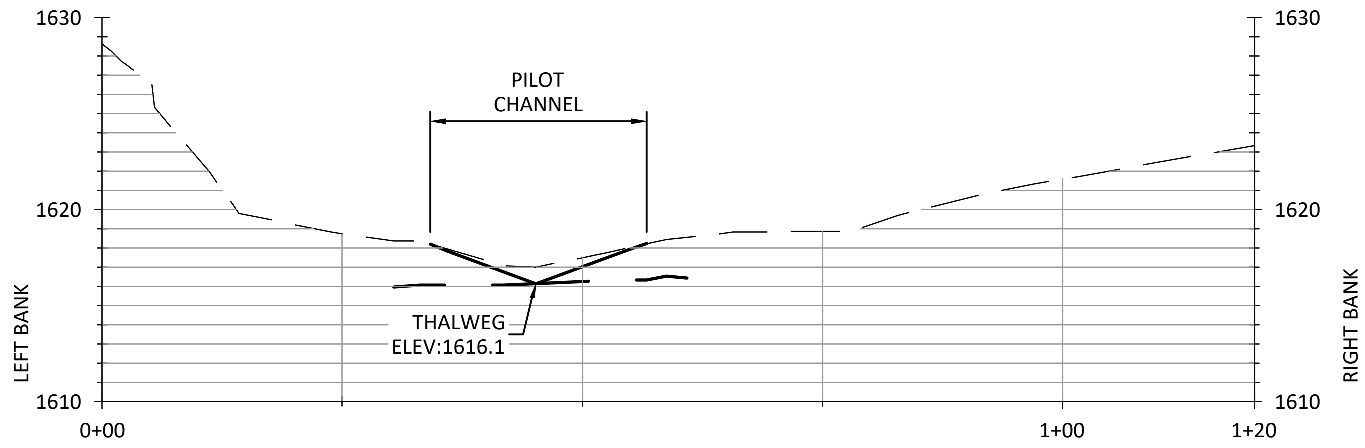

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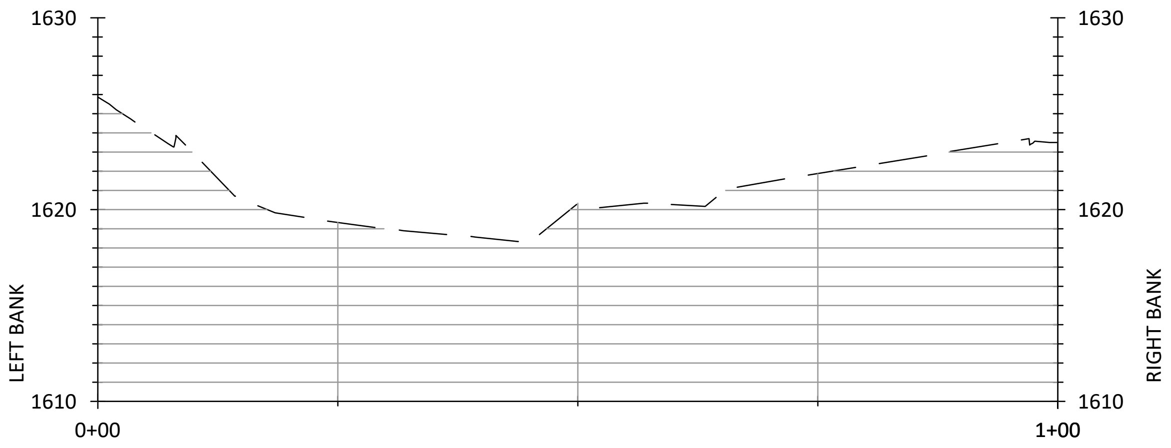

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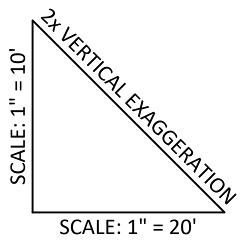

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PILOT CHANNEL GRADING
CROSS SECTIONS

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	Existing Resource Area Dimension	Proposed Resource Area Dimension	Net Change in Resource Area	Temporary Construction Impact*
Bank (310 CMR 10.54)**				
Length Left Bank (feet)	640	640	0**	65
Length Right Bank (feet)	620	620	0**	85
Land Under Water (LUW) (310 CMR 10.56)				
Area (square feet)	42,400	13,200	-29,200	13,800
Riverfront Area (310 CMR 10.58)				
Area (square feet)	n/a***	255,500	255,500	8,000
Bordering Land Subject to Flooding (BLSF) (310 CMR 10.57)				
Area (square feet)	485,000	275,000	-210,000	not calculated

NOTES:

* The temporary construction impact is calculated relative to the Existing Resource Area and the Limit of Disturbance.

** 550 feet of left bank and 560 feet of right bank will be permanently relocated upon removal of the impoundment.

*** Riverfront Area is not applicable to the existing impoundment. Riverfront Area will be created upon removal of the impoundment.

LEGEND

EXISTING AND PROPOSED RESOURCE AREAS

BANK (310CMR10.54)

━	EXISTING
━	PROPOSED

LAND UNDERWATER (310CMR10.56)

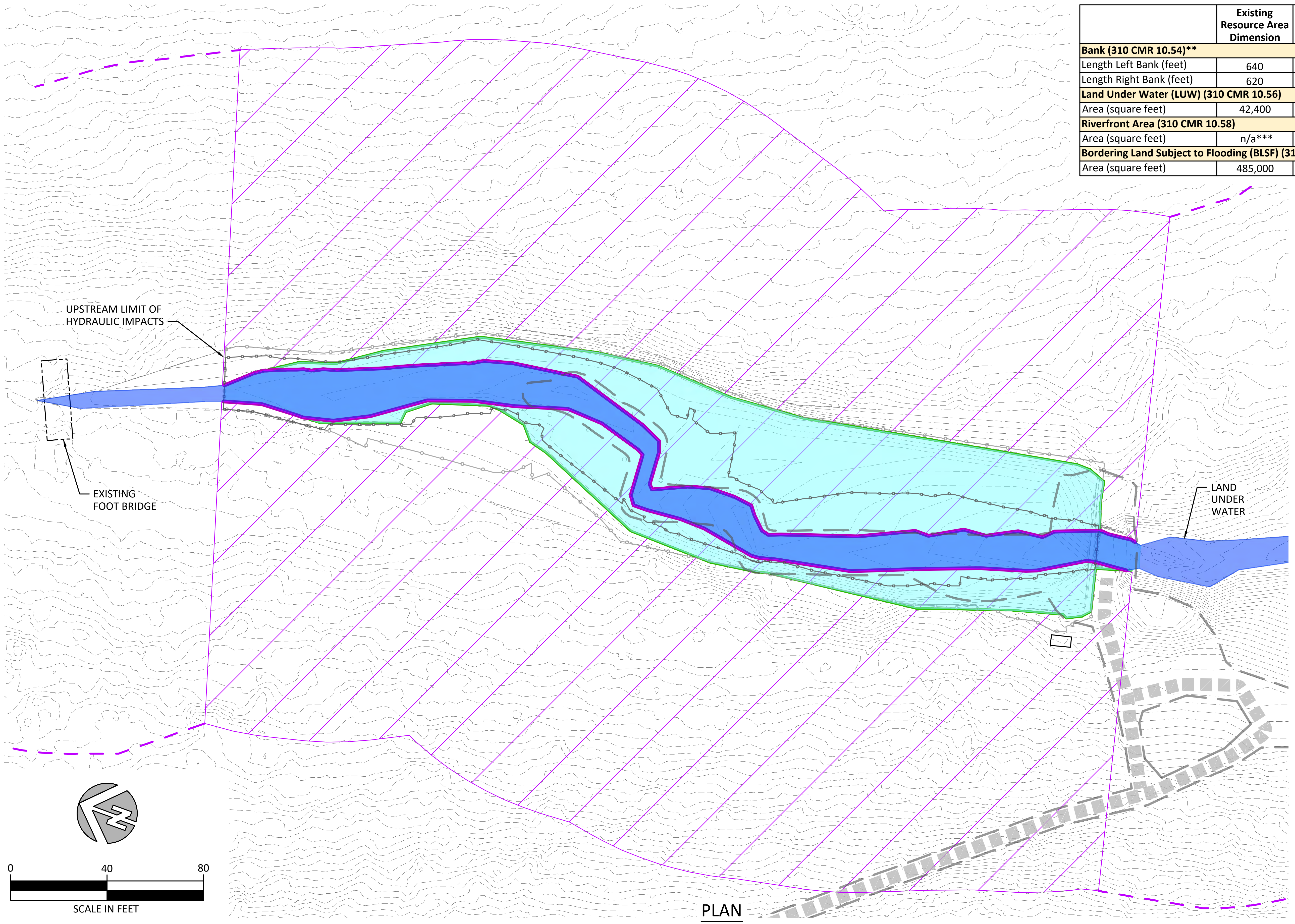
🟦	EXISTING
🟦	PROPOSED

LAND SUBJECT TO FLOODING (310CMR10.57)

─○─○─	EXISTING
─●─●─	PROPOSED

RIVERFRONT AREA (310CMR10.58)

▨	NEW
‒ ‒ ‒	EXISTING RIVERFRONT BOUNDARY



PLAN

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9/4/2020
DATE

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RESOURCE AREA IMPACTS

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Attachment D

Becker Pond Dam Removal Project
Mt Washington, MA
SEIR - EEA File #16226

INTER-FLUVE REVISED 75% DESIGN REPORT
(MAY 2020, REVISED SEPTEMBER 2020)

BSC GROUP

Becker Pond Dam Removal
75% Design Report

MAY 2020, REVISED SEPTEMBER 2020

Becker Pond Dam Removal
75% Design Report

SUBMITTED TO
Division of Ecological Restoration
MA Department of Fish and Game
251 Causeway Street, Suite 400
Boston, MA 02114

and

The Nature Conservancy
The Felt Building
136 West Street, #5
Northampton, MA 01060

PREPARED BY
Inter-Fluve, Inc.
63 Spring Street, 2nd Floor, Suite J
Williamstown, MA 01267

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1. Introduction

In 2019, Inter-Fluve developed preliminary (30%) engineering designs and a sediment management plan for the removal of Becker Pond Dam in Mount Washington, Massachusetts. Inter-Fluve is currently under contract with Massachusetts Division of Ecological Restoration (DER) to progress designs to the 75% completion level. This memo provides updated documentation of the results of our field survey and engineering analyses and an updated summary of the information that forms the basis of our designs.

The project area is located in an Area of Critical Environmental Concern (ACEC area), and is subject to the Massachusetts Environment Policy Act (MEPA) review process, which requires a Mandatory Environmental Impact Report (EIR). During the spring of 2020, the project submitted a request for a waiver from this requirement. On June 24, 2020, the MEPA review team held a virtual site walk and public hearing. Participants in the public hearing raised concerns about sediment management and site access. On July 2, 2020, the project proponents provided supplemental information to the MEPA review team including an expanded alternatives analysis. On July 31, 2020, MEPA issued the response denying the full waiver, but allowing a Single EIR.

The revision to this report and accompanying plan set incorporates the supplemental expanded alternatives analysis and includes the following elements to acknowledge and address the key concerns as the project advances through the local, state, and federal permitting processes:

- Two alternative access entrances off of East Street;
- A pilot channel, excavated through the impoundment;
- Estimated sediment volumes:
  - excavated portion;
  - portion to be disposed upland on site; and
  - portion to be disposed offsite;
- Revised Limit of Disturbance; and
- Revised impacts to Resource Areas as defined in 310 CMR 10.

1.1 THE SITE

Becker Pond Dam is located on an unnamed brook in a relatively remote area near Mount Washington State Forest in the southwestern corner of Massachusetts (Figure 1). Downstream of the Site, the brook flows through Sages Ravine and eventually drains to Schenob Brook, a tributary to the Housatonic River. The dam and surrounding property are part of the 800-acre Mount Plantain Preserve, owned by The Nature Conservancy (TNC), and are accessible via an unpaved road through private property off of East Street, south of Mount Washington. The TNC property is used by the public for hunting, fishing, and other recreation. TNC recently constructed a footbridge upstream of the impoundment to connect the original and new Hallig Trails on either side of the brook. The next bridge over the brook (Undermountain Road, Salisbury, Connecticut) is approximately two miles downstream.

Becker Pond covers an area of approximately 0.65 acres. Becker Pond Dam is composed of a 95-foot-long earthen embankment and a concrete core wall (Figure 2). The dam outlet consists of a rectangular weir spillway with a concrete apron and concrete training walls. The structural height of the dam is approximately 14.25 feet. The crest of the concrete spillway is set approximately 2.25 feet below the top of the concrete core wall and has a weir length of 23.2 feet. The concrete training walls retain the earthen embankments adjacent to the spillway section and direct flow over the concrete apron. The concrete apron extends approximately 16.75 feet downstream of the base of the spillway (Figure 3). A low-level outlet is present, but we understand from others that it is inoperable.

A visual inspection carried out in 2016 (Fuss & O'Neill, 2016) found the dam to be in poor condition with several critical issues, notably, the left training wall, which is cracked and failing, has slipped off its foundation (Figure 4). The inspection also found significant erosion of the earthen embankment adjacent to the wall and cracked and spalling concrete in other areas. The wooden bridge crossing the dam has partially collapsed and has been cordoned off by TNC and warning signs posted.

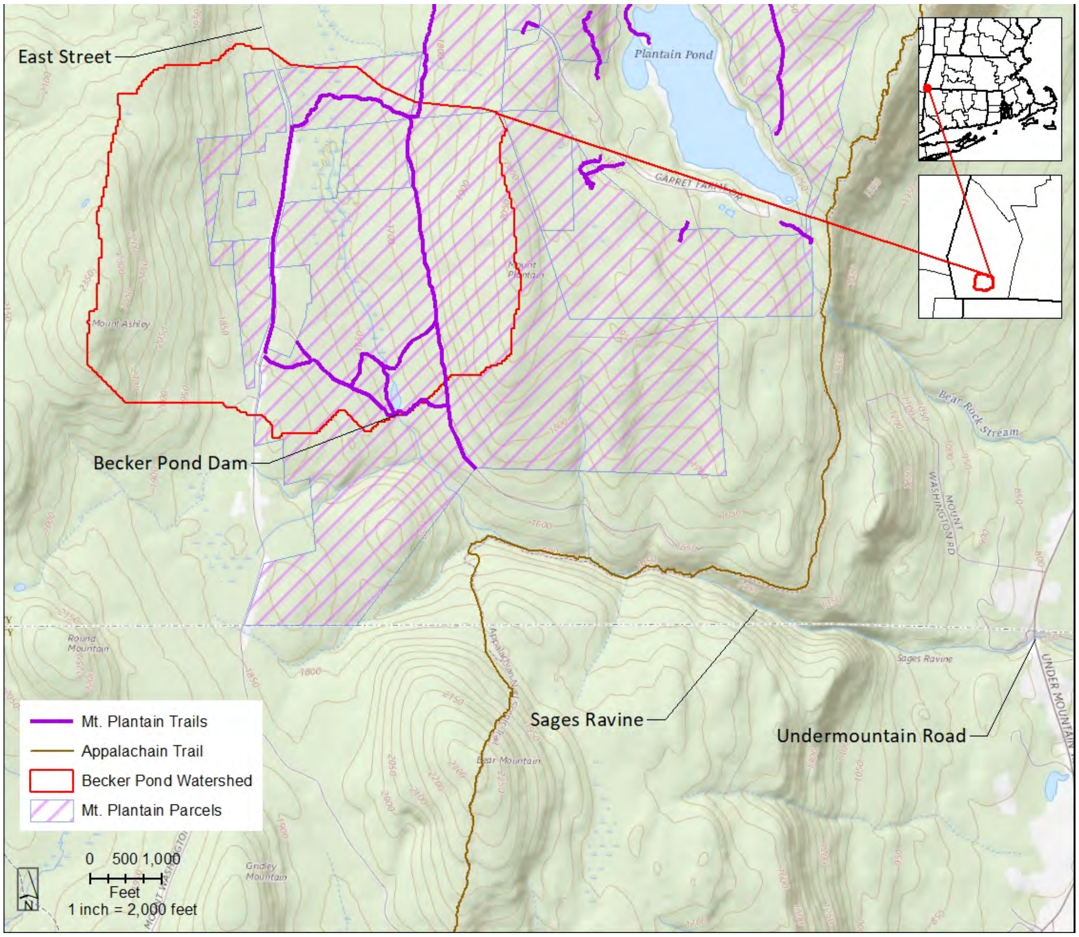

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Figure 3. Right concrete training wall and concrete apron

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1.2 GOALS AND OBJECTIVES

The primary goals of the project are to restore aquatic and hydrologic connectivity through the site and eliminate the safety hazard posed by the dam. TNC and its partners are seeking a simple, low-cost solution to dam removal that will restore habitat for brook trout.

2. Existing Conditions

2.1 FIELD SURVEY

Inter-Fluve geomorphologists and an engineer visited the site on April 26, 2018 for the project kick-off meeting and to carry out the field survey. Our survey scope included collection of topographic, bathymetric, and depth-of-refusal data; evaluation of the presence or absence of wetlands within the anticipated limits of disturbance; collection of impounded sediment samples for grain-size analysis; and observation of the brook's geomorphology upstream and downstream of the dam and impoundment. The depth-of-refusal survey involved probing the soft bed of the existing impoundment and recording the elevation of a competent surface consisting of gravel, cobble, or bedrock. The depth-of-refusal surface suggests the location former longitudinal profile of the channel prior to dam construction, which often also represents the most probable long-term profile of the channel following dam removal. We revisited the site on May 20, 2019 to survey a potential alternative access road location, assess potential wetland impacts of the new access, collect sediment samples for quality testing, and assess potential downstream impacts of passive release.

2.2 GEOMORPHOLOGY

Downstream of Becker Pond Dam, the brook flows over steep terrain within a narrow, hemlock and birch-dominated forested valley. The channel is approximately 12 to 15 feet wide with a 1 to 1.5-foot bankfull depth. Frequent, but irregularly spaced constrictions, created by bedrock, narrow the channel to approximately 8 feet in some locations. The channel exhibits substantial complexity in substrate, form, and habitat (Figure 5). Exposed bedrock, fallen logs, and boulders create steps with 1 to 3 feet of vertical drop in water surface elevation. Plunge pools are located below these drops. Pools are also located downstream of riffles and on the outside of bends where the channel is eroding along the valley edge. Moss covers most of the larger substrate material, suggesting that primarily sand and gravel up to a particle diameter of approximately 2 to 3 inches are frequently mobilized. More information on downstream reaches can be found in the sediment management plan (Appendix A). Approximately two miles downstream, the combined channels pass underneath Undermountain Road at Joyceville (Salisbury, Connecticut, State Route 41).

Upstream of the impoundment, a small stone wall crosses the channel and marks the approximate upstream limit of influence of the dam. The new footbridge, constructed by TNC, is located approximately 50 feet upstream of this stone wall. Upstream of the bridge, for a distance of approximately 100 feet, the channel is steep with boulders and cobbles. Upstream of the steep boulder/cobble area, the channel becomes a lower gradient wetland channel with extensive deciduous wooded swamp wetlands influenced by beaver activity.

Figure 5. Looking upstream towards the dam along the channel, which exhibits complexity in substrate, form, and habitat

2.3 IMPOUNDED SEDIMENT

During the April 2018 field visit, Inter-Fluve field staff collected three sediment cores within the Becker Pond Dam impoundment. Cores were collected from upstream (BPD1), middle (BPD2), and downstream (BPD3) locations and sent to a laboratory for grain-size analysis. Sampling locations are shown in Figure 6. The material sampled was composed of sand, silt, and clay with a median grain size (D_{50}) for all samples in the medium sand range. The analyses showed a reduction in median grain size and increase in fines (silt and clay) content in the downstream direction from approximately 19% fines in the upstream sample to 39% fines in the downstream sample.

We used the bathymetric and depth-of-refusal survey data collection to estimate the volume of impounded sediment. We developed topographic surfaces of the existing pond bed (the top of the impounded sediment) and refusal layer (the bottom of the impounded sediment) from survey data and calculated the volume difference in a GIS environment. The estimated total volume of impounded sediment is approximately 1,500 cubic yards.

Figure 6. April 2018 and May 2019 sediment sampling locations

The refusal layer through the impoundment is anticipated to be composed of cobbles, boulders, or bedrock based on the sound and feel when probing. This matches with observations of the brook geomorphology upstream and downstream of the impoundment. To estimate the volume of sediment that may be readily mobilized following dam removal, we assumed erosion of a channel along the length of the impoundment. We assumed an average channel width of 25 feet, calculated an average impounded sediment depth of 1.5 feet, and used a channel length of 400 feet. This resulted in an estimated mobilization volume of approximately 550 cubic yards, or roughly one third of the total volume of impounded sediment.

The watershed upstream of Becker Pond Dam is approximately one square mile and is primarily forested with land covers of forest (78%), water (8.9%), wetland (6.7%), and developed (1.8%). Less than half a percent of the watershed is composed of impervious surfaces. We performed a desktop due-diligence review to determine possible sources of contamination within the watershed. We reviewed the following data:

- US EPA – no Superfund/Brownfields sites and no National Priorities List sites shown within the watershed;
- MassDEP (USTs) – no underground storage tanks were identified in the town of Mount Washington;
- MassDEP Reportable Release Sites – two sites were identified in the Town of Mount Washington, but both were outside of the project watershed and both were given Release Action Outcome statements of no significant risk;
- RTN 1-0015514 – 2004 - near Hunts Pond, north of the project watershed;
- RTN 1-0014693 – 2003 – at the intersection of East Street and Cross Road, more than two miles north of the project watershed; and

- Massachusetts Source Water Assessment and Protection Program – no source water sites listed for the town of Mount Washington.

No sources of contamination were identified within these public lists, and no additional sources of contamination were identified through reviews of historic topographic maps and aerial photos dating back to the 1890s.

Additional sediment sampling for quality testing was performed in May 2019 along with further due diligence research by MA DER. The results of this work are presented in the sediment management plan included as Appendix A.

To summarize the findings reported in Appendix A, the watershed has seen little development or agriculture, and the due diligence reviews carried out to date suggest there is low potential for the impounded sediment to contain of oil or other hazardous materials. Chemical testing results show that concentrations of the majority of the pollutants tested were below detection levels. Where concentrations were detected, they were below freshwater probable effects concentrations (PECs) (MassDEP, 1996) and therefore, exposures caused by the release of sediment from the impoundment are unlikely to result in environmental harm. Taking all of these things into consideration, the project partners opted initially to pursue passive release of impounded sediment (i.e., no mechanical removal).

Based on feedback received during the MEPA process in June 2020, the sediment management alternatives analysis was expanded to include partial removal of impounded sediment by constructing a pilot channel through the former impoundment. This option was selected. The expanded analysis and a description of the selected sediment management alternative can be found in Appendix B.

2.4 HYDROLOGY

We evaluated the hydrologic conditions of the study area using the regional regression method for ungauged streams described in the U.S. Geological Survey Scientific Investigations Report 2016-5156 (Zarriello, 2017). The hydrologic study area consists of the contributing drainage basin to Becker Pond Dam. Becker Pond Dam is located on an ungauged tributary of the Housatonic River.
The USGS regression method uses characteristics of the contributing watershed including the total contributing area, the mean elevation of the basin, and the total storage in the basin to estimate a peak flood discharge frequency curve. We used the web-based StreamStats tool (USGS, 2016) to delineate the contributing area, estimate the characteristics of the contributing watershed, and calculate peak flood discharges with various return periods.

The StreamStats tool uses the Global Watershed data source to delineate the watershed from a user-specified point. The tool then uses the USGS 30-meter National Elevation Dataset to calculate the mean basin elevation, and the wetland and open water areas defined in the National Land Cover Database (2006) dataset to calculate the total storage within the watershed. We reviewed the watershed delineation and modified it for consistency with the underlying U.S. Geological Survey topographic map prior to calculating the regression method results. StreamStats results (Appendix

C) indicate that the contributing drainage area is approximately one square mile, the mean basin elevation is approximately 1,840 feet, and the total water storage in the basin (as a percent of the total area) is approximately 7.6%. The analysis returns an upper prediction, a lower prediction, and a recommended value. These are presented in Table 2.

For comparison, we also used the gage transfer method of estimating peak flows. The Green River watershed is also located in western Massachusetts in Berkshire County and has an active USGS gage (71 years of record) in Williamstown (USGS gage no. 01333000). We examined a number of other gages in central and western Massachusetts, but selected the Green River because of the similarity between the two basin characteristics (Table 1). Peak flood discharges for specific annual exceedance probabilities at the Green River gage were estimated from gage records of annual peak flows using the USGS program PeakFQ (USGS, 2019). The Bulletin 17B methodology was selected, and a regional skew coefficient of 0.37 was used (Veilleux et al., 2019). The results are provided in Table 2.

Of the two methods, gage transfer results in lower estimates that approximate or fall below the lower bounds of the 95% confidence interval on the StreamStats estimates. Characteristics of the Green River watershed suggest that the gage transfer method may underestimate peak flows at the Becker Pond Dam site. Specifically, the watershed at the Green River gage has lower historical average precipitation, which is likely associated with the lower mean basin elevation. Additionally, more of the watershed is underlain by sand and gravel, which should be inversely related to runoff rates. The Becker Pond Dam watershed does have a greater proportion of waterbodies and wetlands, which is considered a proxy for storage; however, the estimated area (approximately 8%) is primarily Becker Pond, which is a run-of-river dam and provides little storage.

With respect to the StreamStats results, Zarriello (2017) states that many of the stream gages with small drainage areas used in developing the regional flood flow equations have a short period of record spanning from the mid-1960s to the mid-1970s and do not capture recent trends in increasing precipitation and runoff rates. The author suggests that this may bias the magnitude of annual exceedance probability flows for small drainage areas towards the low end. This suggests that for Becker Pond Dam, StreamStats results should error on the side of under- rather than over-estimation. Because both methods appear to have the potential to underestimate peak flows at the site, we recommend taking a conservative approach and adopting the higher estimates, which are the StreamStats estimates (shown in bold in Table 2).

Table 1. Becker Pond Dam and Green River (USGS 01333000) watershed characteristics

Characteristic	**Becker Pond Dam site**	**Green River gage**
Drainage area (square miles)	1.05	42.7
Mean basin elevation (feet)	1,840	1,560
Basin average mean annual precip. 1971-2000 (inches)	54.3	48.5
Forest cover (%)	81	78
Waterbodies and wetlands cover (%)	7.6	0.3
Impervious cover (%)	0.05	0.97
Underlain by sand and gravel (%)	3	11

Table 2. Peak flood discharge estimates in cfs

Annual exceedance probability (AEP) %	**Average return period (years)**	**StreamStats**			**Gage transfer**
		Estimate	**Lower limit**[a]	**Upper limit**	
50	2	**80**	35	170	35
10	10	**190**	85	445	70
4	25	**275**	115	660	95
2	50	**345**	135	870	115
1	100	**425**	160	1110	135

[a] The lower and upper limits shown represent the bounds of the 95% confidence interval for the estimate

Climate change projections suggest that precipitation patterns in Massachusetts will trend toward increased total precipitation, increased frequency of extreme precipitation events, and more precipitation falling as rain instead of snow (EEA, 2011; 2018), all of which will result in higher flood peaks. Trends supporting these projections have been observed in historical records since the 1970s (e.g., Collins, 2009; Walter and Vogel, 2010; Barrett and Salis, 2017).

While state-wide flow design guidance is still under development in Massachusetts, the neighboring state of New York published a draft flood risk management guidance document in June 2018 that contains suggested flood peak multipliers for use in designing for future conditions (NYSDEC, 2018). For eastern New York, a multiplier of 1.2 is recommended for projects with a design life ending in the period 2025 to 2100. Anticipated precipitation trends are similar for eastern New York and western Massachusetts; therefore, we recommend adopting a multiplier of 1.2 for estimating future flood peaks at the Becker Pond Dam site if simulation of climate change impacts is deemed necessary. Additional site-specific discussion can be found in Section 3.1.

Fish passage flows were estimated using StreamStats, and the estimates available through the program are summarized in Table 3. Percentile flows are predicted flows equaled or exceeded 99, 95, and 50% of the time.

Table 3. Low flow estimates in cfs

Estimate	Flow
99th percentile	0.06
95th percentile	0.13
50th percentile	1
7-day, 2-year low flow	0.11
7-day, 10-year low flow	0.06

2.5 HYDRAULICS

We used U.S. Army Corps of Engineers (USACE) Hydraulic Engineering Center-River Analysis System (HEC-RAS) software to develop a 1-dimensional model of the subject reach to simulate water surface profiles of the Becker Pond stream channel for two conditions: the existing condition and the post-project dam removal condition. The existing condition represents the site condition surveyed in April 2018. The subject reach begins approximately 160 feet downstream of the existing dam and extends approximately 860 feet to a point upstream of the limit of the existing impoundment.

We developed the existing condition model geometry in a GIS environment using the Geo-RAS toolset. The channel and structure cross-section geometries are based on the 3-dimensional model of the terrain developed from the site-specific survey data collected in April 2018 and shown on the plans. For both the existing and proposed model scenarios, we assumed a downstream boundary condition defined by the normal friction slope, approximately 2%. StreamStats peak flow estimates from Table 2 were used in the simulations.

In general, we assumed a Manning's "n" value for the channel of 0.07, which is consistent with boulder step-pool streams (mountain streams with a bottom of gravel, cobble, and few boulders) and a Manning's "n" value for the overbank of 0.12, which is consistent with forested floodplains (forested areas with little undergrowth, with flood stage reaching branches). For the existing condition model, we assumed a Manning's "n" value of 0.023 for areas occupied by concrete and 0.03 for the area within the impoundment, which is consistent with a clean, winding channel with pools and shoals.

2.1 WETLANDS AND ECOLOGY

The MassDEP wetlands database (MassDEP, 2005) includes Becker Pond and defines the area as Open Water (Figure 7). Upstream of the impoundment, the database indicates that there is an area of wooded deciduous swamp. Field observations are consistent with the database. The area upstream of the pond is dominated by low-gradient stream conditions and beaver activity. The database does not indicate wetland areas downstream of the dam within the proposed limits of disturbance.

Immediately downstream of the dam, the channel is formed by steep hillslopes meeting the edge of the stream. We observed no wetlands in these steep, narrow areas. Further downstream, there are a few locations where the stream valley broadens for a short distance. In these broad areas, we observed small areas of bordering vegetated wetland occupying depressions in the active floodplain.

Figure 7. DEP wetlands

Following the removal of the Becker Pond Dam, we anticipate that upstream of the dam, the land under water (Becker Pond) will convert to upland hillslope with small areas of bordering vegetated wetlands, similar to the conditions we observed downstream of the dam. No changes to wetland resource areas or the stream ecology are anticipated upstream of the impoundment or downstream of the dam.

Two options for access to the dam are currently being considered. One option (Access Entrance Alternative 1) involves the use of an existing dirt road from East Street to the dam. Approximately 350 feet of this road, beginning at East Street, are within private property. TNC is currently investigating options to gain access to this road during construction. The alternative access option (Access Entrance Alternative 2) is to construct a new access road that is entirely within TNC property and that connects East Street to the existing dirt road. This new access road is located approximately 100 feet from a concentrated drainage flow path that originates at the outlet of a drainage relief culvert under East Street (Figure 8). Sand and gravel have accumulated on the downstream (eastern) side of the culvert crossing and have covered the roots of several trees. The accumulated material has also raised the concentrated drainage flow path above the adjacent ground and prevents a small area north of the flow path from draining (Figure 9).

Figure 8. Area of wetland investigation showing the location of the drainage flow path and proposed new access. The sample sites correspond to the wetland delineation forms in Appendix D.

Figure 9. Wet, low-elevation areas in the foreground, and higher ground dominated by mountain laurel in the background

In May 2020, we performed a site investigation to determine if the area between the concentrated drainage flowpath and the proposed access road alignment meet the definition of a bordering vegetated wetland under 310CMR10.55 (*et seq*). We observed that, in this area, the vegetation is primarily made up of trees with a few saplings and shrubs. The tree stratum is dominated by facultative upland (FACU) species including red oak at 90 to 95% absolute cover and beech at 5 to 30% cover. The few shrubs and herbaceous species that were present were dominated by FACU species. Although the soils were wet, no hydric soil indicators were present. We have therefore concluded that the area does not meet the definition of a bordering vegetated wetland[1] (see Appendix D for wetland delineation forms).

The site is located within a priority habitat of a state-listed species protected under the Massachusetts Endangered Species Act. Natural Heritage & Endangered Species Program (NHESP) staff reviewed and commented on the 30% designs in August 2018 (Misty-Anne Marold, personal communication with Karen Lombard of TNC, 10 August 2018). This initial feedback suggests that the proposed work around the dam will not be problematic from a habitat alteration perspective. Discussions with NHESP are ongoing.

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[1] Bordering vegetated wetlands as defined in 310CMR10.55

3. Project Design

3.1 SUMMARY OF DESIGN APPROACH

The design presented in this memorandum and on the associated plans (the Plans) includes (1) removing the full vertical and lateral extent of concrete associated with the dam, (2) re-grading the earthen portion of the embankment to approximate the pre-dam cross section, and (3) excavating a pilot channel through the impoundment. The aim is a minimal effort approach to minimize impacts to the site and to achieve the primary project goals to eliminate the safety hazard posed by the dam and to restore aquatic connectivity through the site.

Our hydrologic study of the watershed indicates that the contributing area to the Becker Pond Dam remains undeveloped. The existing characteristics of the watershed including land use, land cover, and soils are consistent with the conditions that existed when the impoundment was created. Therefore, we do not anticipate a need to design countermeasures for increases in peak flood flows resulting from changes to the watershed condition. Some aspects of the riparian corridor that provided stability before the dam was installed (i.e., vegetation) have been compromised. We anticipate some channel evolution in the footprint of the impoundment as the sediment evacuates following dam removal. The approach to vegetation re-establishment and management is described below.

Our depth-of-refusal survey data suggests that material found below the impounded fine sediment is likely to be consistent with the material observed in the bed and banks both up and downstream of the impoundment, (i.e., cobbles, boulders, and bedrock). The existing material upstream and downstream of the impoundment is currently stable; it is not prone to erosion. We expect the overlying sediment to evacuate the former impoundment over time to reveal the underlying cobbles, boulders, and bedrock. We propose to excavate a pilot channel through the impoundment and to broadcast native seed onto land formerly under water. These measures will reduce the risk of sedimentation to points downstream by reducing the volume of mobilized sediment and accelerating vegetative stabilization of the banks and floodplain.[2] We do not expect that additional channel stabilization or armoring measures will be necessary to prevent extraordinary erosion or to protect adjacent and/or upstream infrastructure (there is none).

Future increases in peak flood flows are anticipated at the site as a result of climate change. At the Becker Pond Dam project site, there is no infrastructure that would be at risk of changing hydraulic conditions nor does the design include active channel restoration components or stabilization measures. We therefore simulated present day predictions of peak flood flows for comparison of pre- and post-project hydraulic conditions. Although it is reasonable to anticipate some evolution of the channel and of the wider watershed as precipitation changes, restoration of flow and sediment

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[2] In response to the MEPA review, we have changed the preferred sediment management approach to include excavation of a pilot channel within the former impoundment. The text in this section of the report has been updated to reflect this change. See also, Inter-Fluve, July 2020.

continuity through dam removal will restore natural resilience at the site by allowing the brook to adjust naturally through time.

Based on the assumptions that the condition of the stream prior to the construction of the dam was stable and that the watershed conditions that affect the stability have not been altered, our proposed design limits the area of direct excavation to (1) the dam structure itself: the entire lateral and vertical extent of the concrete core-wall, spillway, training walls, and apron, and portions of the earthen embankment and (2) a pilot channel within the former impoundment

The proposed embankment re-grading reflects an intent to tie into contours of the existing valley slopes and stream channel, both upstream and downstream of the dam. At this time, the Plans reflect the implicit assumption that the material within the limits of grading is unconsolidated; however, based on our observations of the valley slopes downstream of the dam, we think it is likely that the embankment is constructed of fill placed on boulders and bedrock. If consolidated, stable material is not encountered within the proposed grading area, we propose to excavate material to achieve an approximately 2H:1V slope from the channel bed to the valley slope tie-in location.

We propose that excavated earthen material be reused on site. One potential area of reuse that has been identified is the area of material placement shown on the Plans along the right bank immediately downstream of the existing dam. The intent is to use salvaged soil to fill a low spot in the bank. Field evidence suggests that this low spot was a borrow area for the original dam construction. The proposed contours reflect an intent to restore the historical borrow pit. Material placement will tie into the existing contours downstream where the bank is undisturbed, thus restoring the bank in this location to something closer to its likely original form.

The Plans indicate limited work to excavate and stabilize the pilot channel following the removal of the dam. Cobble and boulder material found the excavation spoils will be placed in the area currently occupied by the concrete apron. Aside from this, no active channel construction downstream of the dam is proposed.

Text on the Plans reflects the stated intent to remove the full vertical and lateral extent of the concrete core wall. At this time, the vertical and lateral extent is unknown. The Plans reflect the intent to remove other concrete components including the apron, the spillway, and the training walls. We recommend that the concrete material be removed from the channel (to a staging area), broken into pieces, and removed to an approved facility.

The Plans and intent reflect Sediment Management Alternative 4, a limited sediment management approach with excavation of a pilot channel within the impoundment. See the sediment management plan included as Appendix A, the supplemental information provided to the MEPA Review office (Appendix B), and the section on sediment management below.

The Plans indicate that land formerly underwater is to receive a treatment of native stabilization seed mix and that all excavated slopes that result in bare soil are to receive a slope treatment of native upland/stabilization seed mix with biodegradable surface fabric on top, staked in place to retain the soil on the slope until the vegetation has been established. In addition to seeding and surface fabric, native shrub and tree plantings are shown within the limits of the former borrow area where fill is proposed to help speed up establishment of good vegetative cover.

3.2 SEDIMENT MANAGEMENT

Of the estimated total of 1,500 cubic yards of impounded fine sediment contained behind the dam, it is anticipated that approximately one-third may be readily mobilized following dam removal. Potential impacts of mobilization on downstream reaches is discussed in the sediment management plan in Appendix A. Alternative 4, or partial removal of impounded sediment, will be pursued at this site.

3.3 HYDRAULICS

We developed the full dam removal condition model geometry by modifying the existing condition model geometry in the following ways:

- Removing the dam (the inline structure); and
- Modifying the overbank and channel grading between sections 1+29 and 1+83 (Plan stations) to represent the removal of material (both earth and concrete) within the footprint of the dam.

The post-project dam removal condition represents the site condition shown on the proposed grading plan during the time period immediately following construction; it does not anticipate the long-term evolution of the streambed. Refer to the previous section on existing conditions hydraulics for a discussion of downstream boundary conditions and manning’s “n” values used in the model. A summary of the hydraulic modeling results is provided in Appendix E.

Model estimates indicate that the removal of the dam will reduce the elevation of the flood profile (for all events) immediately upstream of the dam by approximately 12 feet. Model results also indicate that hydraulic impact of the dam extends to a location approximately 600 feet upstream of the dam. Upstream of that location, the removal of the dam will not affect the hydraulic conditions within the stream channel. Figure 10 illustrates the impact of the dam removal on the flood profiles of the subject reach for the 2-, 10-, 25-, 50- and 100-year return period events.

We do not anticipate that the removal of the Becker Pond Dam will impact infrastructure. Model results and site visit observations support the conclusion that there is no infrastructure within the upstream limits of the hydraulic influence of the dam. Together, the storage in the impoundment and the outlet structure at the dam do not provide significant attenuation of flood flows of any frequency, small or large. Model results indicate that the dam overtops during an event with an average return period between 5 and 10 years. Removal of the dam will have a negligible impact on peak flood flow conditions at infrastructure downstream, namely Undermountain Road (State Route 41).

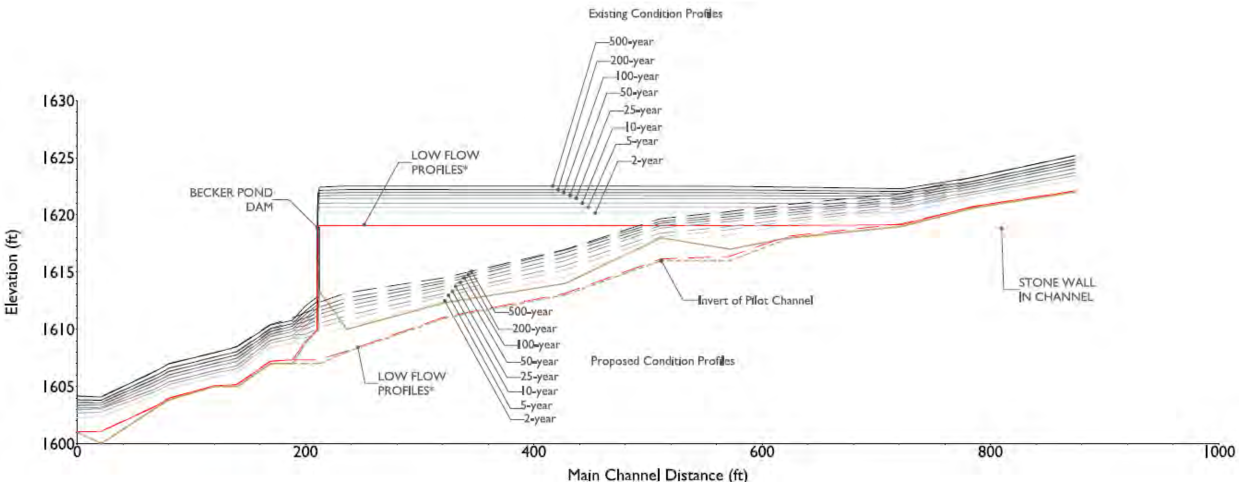

Figure 10. Comparison of flood profiles: 2-, 10-, 25-, 50-, 100-year events

We anticipate that the removal of the Becker Pond Dam will have a favorable impact on aquatic habitat connectivity along the brook. Removal of the dam will eliminate a 12- to 14 -foot vertical discontinuity in the hydraulic grade line of the brook. Hydraulic model results predict that for the range of low flows simulated, average channel velocities will remain below sustained burst speeds of brook trout (2 to 3.5 ft/s) and well below maximum burst speeds (4 to 7 ft/s). We anticipate that the condition of the streambed within the impoundment will evolve to a condition that is similar to that of the bounding reaches, which exhibit both substrate and flow complexity.

3.4 WETLAND AND ECOLOGICAL IMPACTS

During the work to remove the Becker Pond Dam, construction activities are expected to have a minimal impact on wetland areas. The proposed locations for access, staging, and active construction areas are within upland areas. The proposed pilot channel excavation will occur on land formerly under water. We reviewed the area adjacent to the dam and found that no bordering vegetated wetlands[3] exist in the area to be impacted by construction activities. The removal of the dam will impact resource areas including channel, bank, and land under water. With the exception of the pilot channel excavation, construction period activities can be phased to minimize vehicle traffic across the active channel.

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[3] Bordering vegetated wetlands as defined in 310CMR10.55

3.5 COST OPINION

An opinion of probable construction costs is provided in Appendix F. We estimated lump sum and unit costs based on review of construction costs for similar items in past projects and applicable reference cost data. The actual implemented cost may vary from these estimates as a result of market factors, detailed design development, or other factors.

Several assumptions were made in developing costs. Key assumptions include:

- A construction duration of approximately four weeks;
- Excavated earthen material will be reused on site. A total of approximately 525 cubic yards of excavation is required to meet the lines and grades shown on the plans. Of the 525 cubic yards, approximately 225 cubic yards will be used to restore the left bank at the location of the historical borrow pit as shown on the Plans. Another use for the remaining 300 cubic yards will need to be identified. We have included an additive item in the cost estimate for offsite disposal of the entire 525 cubic yards if deemed necessary and have assumed local beneficial reuse rather than landfill disposal;
- Additional excavation as required to remove the full vertical and lateral extent of the concrete core wall is considered incidental to the Dam Demolition and Disposal item;
- The excavation volume excludes the concrete volume;
- Offsite disposal of concrete will be required;
- Access Entrance Alternative 2: Work to construct the new access entrance and road will be necessary and will consist of clearing and grubbing. Cleared vegetation will be chipped and left on site, and material import for road construction will not be required. The new road will be partially seeded and planted following construction to narrow its width for permanent pedestrian access only; and
- Construction of drainage facilities for the new access road will not be necessary.

We applied a contingency of 20% to account for uncertainty in associated with bidding and the construction process, uncertainty or future changes in unit costs, and scope or design changes that may arise during the design process or as a result of permit conditions.

4. Construction

4.1 ACCESS AND STAGING

Construction period access to the dam will occur from the west side via East Street. At this time, the project is considering two alternate access routes. The preferred access route (Access Entrance Alternative 1) follows an existing access road that originates on private property on East Street and proceeds all the way to the dam. The alternate access route (Access Entrance Alternative 2) is located entirely on TNC property. It also originates on East Street, and joins the existing access road approximately 700 linear feet from East Street.

At the locations of the access points, East Street is a well-maintained gravel road but is closed during the snow season; snow removal is not provided. The existing dirt access road is approximately 10-12 feet wide and will be wide enough for access of heavy construction vehicles (Figure 11). Some vegetation clearing may be necessary; tree branches may need to be removed. Where the existing access road approaches the dam, there is a small loop around a few mature hemlock trees. This loop will be available for access to allow for turning and storage of vehicles.

Figure 11. Existing dirt access road to be used during the removal of Becker Pond Dam (left) looking north along the road and (right) looking east towards the dam.

The Plans show both access alternatives. Two proposed staging areas have been identified on the Plans. One is at the beginning of the new access point just off of East Street, labeled as Access Entrance Alternative 2: Temporary Staging on the Plans. The second staging area is just west of the dam in the area of the small access loop described above. At the southeast end of this loop, additional area to the southeast could be used to stage vehicles, equipment, and materials.

TNC intends to convert Access Entrance Alternative 2 to a permanent pedestrian only trail. Its permanent width will be reduced from the construction width using native plantings and/or seeding. The details of the restoration are being developed in consultation with NHESP.

4.2 SUGGESTED CONSTRUCTION SEQUENCE

The construction contractor typically identifies a preferred construction sequence that is reviewed and approved by the Owner and Owner's Technical Representative. Primary considerations for sequencing at this site are access constraints, minimizing safety risk associated with operating near the failing training walls, and minimizing disturbance within the channel. For planning purposes, the following is a suggested construction sequencing based on our experience with other dam removal projects and this dam's specific site conditions.

1. Access Entrance Alternatives 1 and 2: Establish construction entrance and staging area at East Street. Install erosion and sedimentation control BMPs, high visibility fencing, and temporary closure signs.
2. Access Entrance Alternative 2 (only): Clear and grub for the new permanent access road. Construct new access road.
3. Establish staging area adjacent to the dam. Install erosion and sedimentation control BMPs, high visibility fencing, and temporary closure signs.
4. Implement water management plan.
5. Remove the dam spillway.
6. Remove the right-hand training wall.
7. Excavate the earthen embankment, remove the concrete core wall, and grade the slope on the river right.
8. Remove the left-hand training wall.
9. Excavate the earthen embankment, remove the concrete core wall, and grade the slope on river left.
10. Excavate the pilot channel.
11. Install surface fabric, seed, and plantings within limits shown.
12. Remove water management controls.
13. Restore disturbed areas to a suitable condition.
14. Remove erosion and sedimentation controls.
15. Remove equipment and seed and plant along the new permanent access. Details TBD.
16. Remove temporary fencing and signs.

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Appendix A - Sediment Management Plan

TECHNICAL MEMORANDUM

To:	Eric Ford, MA DER
From:	Candice Constantine and Nick Nelson, Inter-Fluve
Date:	August 2, 2019
Re:	Becker Pond Dam Removal – Sediment Management Plan

Introduction

The Becker Pond Dam is located on an unnamed brook in a relatively remote area near Mt. Washington State Forest in the southwestern corner of Massachusetts (Figure 1). The dam is in poor condition with several critical safety and structural issues. Downstream of the dam, the brook flows through Sages Ravine and eventually drains to Schenob Brook, a tributary to the Housatonic River. The dam and surrounding property are part of the 800-acre Mt. Plantain Preserve, owned by The Nature Conservancy (TNC), and accessible via an unpaved road through private property off of East Street, south of Mt. Washington. The TNC property is used by the public for hunting, fishing, and other recreation. Downstream, the Appalachian Trail (AT) runs alongside Sages Ravine, which is popular for swimming and picnicking. A campsite is located at the top of the ravine where the AT crosses the brook via a wooden footbridge. The next bridge over the brook (Undermountain Road, Salisbury, Connecticut) is approximately two miles downstream.

Inter-Fluve previously completed draft 30% designs for dam removal on behalf of TNC. At the time, impounded sediment volume was estimated and grain-size sampling was carried out, and both supported passive release as a potential sediment management approach[1]. However, more information was desired to confirm this and support permit applications. Inter-Fluve was contracted by the Massachusetts Division of Ecological Restoration (MA DER) to gather more information on sediment quality and anticipated depositional zones downstream of the dam should impounded sediment be released passively. The purpose of this technical memorandum is to report the findings of additional sediment sampling and analyses and a reconnaissance level site walk of downstream reaches.

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[1] For more information on previous work and site details, see the Becker Pond Dam Removal 30% Design Memorandum dated August 2019

Sediment Due Diligence

MA DER completed a due diligence review in May 2019 and concluded that there is low potential for contamination of the impounded sediment at the site. This corroborates Inter-Fluve's findings reported in the current 30% design memorandum. MA DER's review is attached as Appendix A.

Sediment Sampling and Analyses

Two Inter-Fluve geomorphologists visited the site on May 20, 2019 and collected a total of six sediment samples from the site for testing. Details of methods and materials are provided in the attached sediment sampling plan prepared by MA DER (Appendix B). Sample locations are shown in Figure 1 and described below.

- One sample upstream of the impoundment – Sample location U1 was approximately 100 feet upstream of the TNC footbridge where sediment had accumulated upstream of a riffle (Figure 2).
- Three samples from within the impoundment – Samples U2 and U3 were collected from the thalweg of the channel. Sample U4 was collected on river left in an area of likely future floodplain that contained impounded sediment.
- Two samples downstream of the dam – Areas of fine sediment deposition are generally sparse in the reaches immediately downstream of the dam. Sample location D1 was approximately 350 feet downstream of the dam (Figure 3 and Figure 4) at a location where the valley floor widens and local gradient reduces. The sample was collected from a small channel running through a vegetated island. Sample location D2 was approximately 750 feet downstream of the dam (Figure 5) at the site of local deposition on the left bank immediately upstream of large wood in the channel.

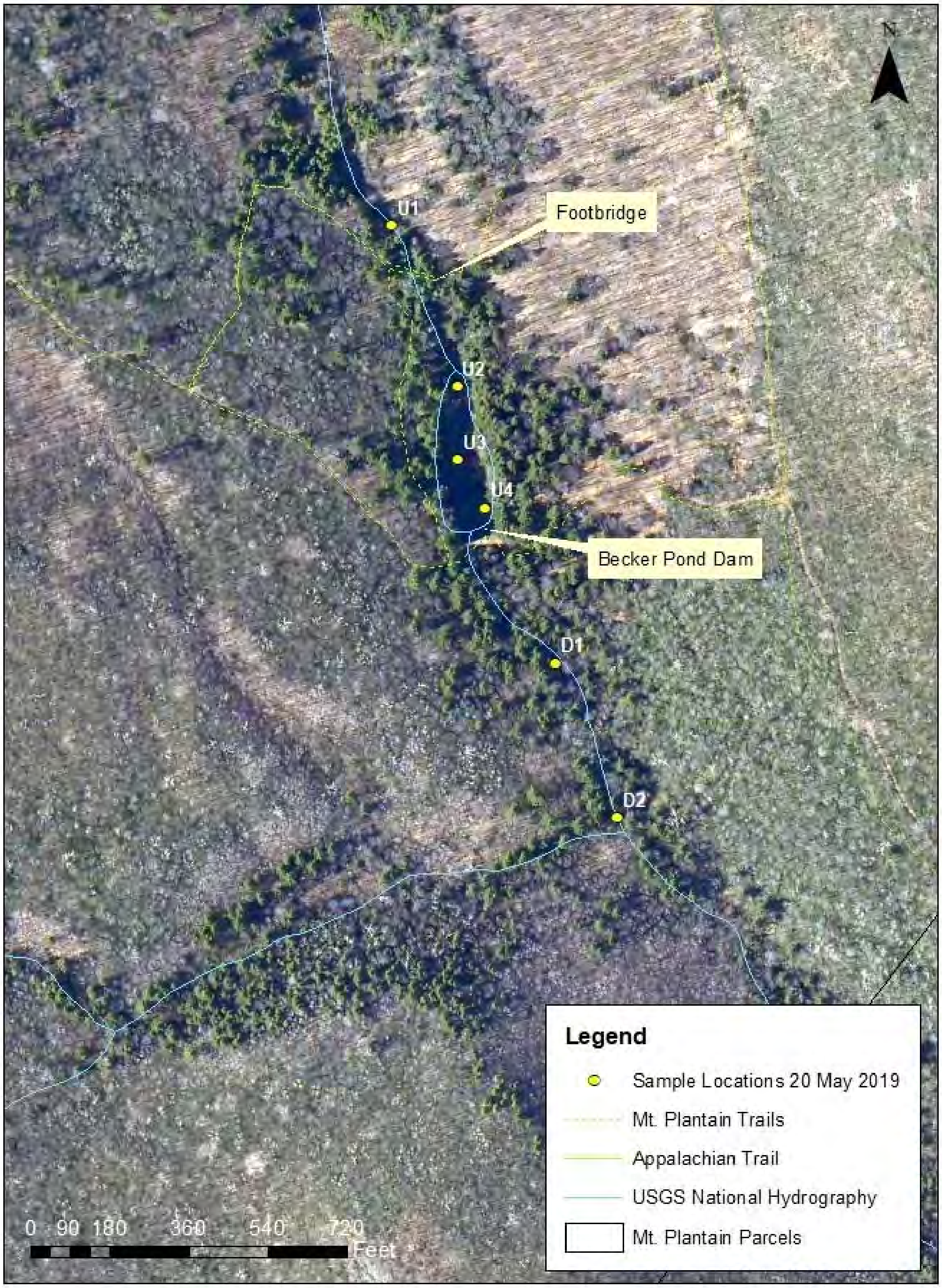

Figure 1. Sample locations 20 May 2019

Figure 2. Sample location U1 on left bank (far side of photo) approximately 100 feet upstream of footbridge upstream of impoundment

Figure 3. Looking downstream at sample location D1

Figure 4. Close-up of sample location D1

Figure 5. Looking downstream at sample location D2 on river left approximately 750 feet downstream of dam

The collected samples were analyzed for metals, polycyclic aromatic hydrocarbons (PAHs), extractable petroleum hydrocarbons (EPH), polychlorinated biphenyls (PCBs), pesticides, total organic carbon, and grain size. A summary table of the results and the full laboratory reports are contained in Appendix C. Grain-size data indicates that the impounded sediment is primarily sand with some gravel and fines; a previous volume estimate suggests that approximately 1,500 cubic yards of material is stored behind the dam[2]. Chemical testing results show that concentrations of many of the pollutants were below detection levels (results shown in green). Where concentrations were detected, they were below freshwater probable effects concentrations (PECs)[3] and therefore, exposures caused by the release of sediment from the impoundment are unlikely to result in environmental harm.

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[2] Inter-Fluve, 2018. Becker Pond Dam Removal 30% Design Memorandum. Draft dated June 13, 2018

[3] Massachusetts Department of Environmental Protection. Revised Sediment Screening Values. Update to Section 9 of *Guidance for Disposal Site Risk Characterization – In Support of Massachusetts Contingency Plan* (1996).

Sediment Yield

As noted above, we previously estimated that the volume of impounded sediment between Becker Pond Dam and the footbridge is approximately 1,500 cubic yards (2,250 tons). In order to provide context for the volume of accumulated sediment in the impoundment, we analyzed the potential sediment yield from the unnamed brook and the wider Schenob Brook watersheds as part of preparing the 30% design memorandum. The remaining text in this section is repeated from the design memorandum. Simon et al.[4] completed a regional analysis of suspended sediment discharge measurements at USGS gage sites and found a median yield of $0.87 \frac{tons}{day \cdot km^2} \left(2.4 \frac{tons}{day \cdot mi^2}\right)$ for the 1.5-year flood event in EPA Level III Ecoregion 58 – Northeastern Highlands, which includes the study site. The 1.5-year event is considered to be the effective discharge, or the discharge that transports the largest proportion of the annual suspended sediment load over the long term, and so sediment yield calculated for the 1.5-year flow is often used to approximate the long-term sediment yield for a watershed. Using the above yield estimate and drainage areas of 9.4 and 130 square kilometers (3.9 to 46.8 square miles), the estimated average annual suspended sediment loads of the unnamed brook and Schenob Brook are approximately 3,000 tons and 41,300 tons. Thus, the total mass of impounded sediment constitutes 70% of the average annual suspended sediment load of the small brook and 5% of the annual suspended sediment load of Schenob Brook.

Note that these sediment yield estimates are for suspended sediment only. Suspended sediment may comprise nearly all or only a fraction of the total sediment load of a stream, which is made up of both fine-grained material transported in suspension (suspended load) and coarser material traveling along the bed (bedload). Typical proportions of suspended sediment to bedload sediment in gravel bed rivers are 80% to 90% suspended sediment and 10% to 20% bedload. Along the brook where relief is high and soils are shallow and rocky, the bedload fraction is likely high in this range such that the estimated suspended load underpredicts total load by 20% or more. In this case, the mass of impounded sediment would be a smaller proportion of the average annual sediment load.

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[4] Simon, A., Dickerson, W., and Heins, A., 2004. Suspended-sediment transport rates at the 1.5-year recurrence interval for ecoregions of the United States: transport conditions at the bankfull and effective discharge? *Geomorphology* 58 (2004): 243-262. doi: 10.1016/j.geomorph.2003.07.003

Sediment Routing

We conducted a reconnaissance-level survey of potential depositional areas downstream of the dam (Figure 6). The purpose of the survey was to provide information on how impounded sediment might move through the system once released and where sediment may temporarily or permanently deposit. We walked the stream from the dam downstream approximately one mile through Sages Ravine to where the Appalachian Trail crosses the stream.

Reaches downstream of the dam are generally lacking fine sediment, reflecting both the effect of the dam in trapping sediment and the high competence of the stream. Fine sediment deposits were observed in areas where gradient is locally reduced or the valley is locally wide; both of these characteristics result in lower flow velocities and shear stresses and thus allow for settling out of finer material. These areas are likely to be locations of sediment deposition and possibly permanent storage in low energy areas of the channel and/or floodplain following dam removal. Two such locations are sample locations D1 and D2 shown in Figure 1, Figure 3, and Figure 5. The site at D1 is likely to be a location of some permanent storage.

Elsewhere, the channel upstream of Sages Ravine generally exhibits a step-pool morphology with temporary deposition likely in pools and upstream of log jams. Examples are the approximately 200-foot reach immediately downstream of the dam (Figure 7) and an approximately 200-foot-long straight reach with deep and long pools (Figure 8). Existing pools are likely to fill temporarily following dam removal. Filling and then remobilization of the material during subsequent higher flow events will help to replenish fine fractions in these reaches and disperse sediment released from the dam. The latter effect will help dampen impacts farther downstream at, for example, Sages Ravine.

Downstream of sample location D2 and a small tributary coming in from river right, the channel enters a relatively steep reach with some bedrock exposures and boulder steps. Cascades, steps, and pools characterize the channel over the next approximately 1,000 feet downstream (Figure 9). Depositional opportunities are minimal in these reaches, and therefore impacts are also likely to be minimal.

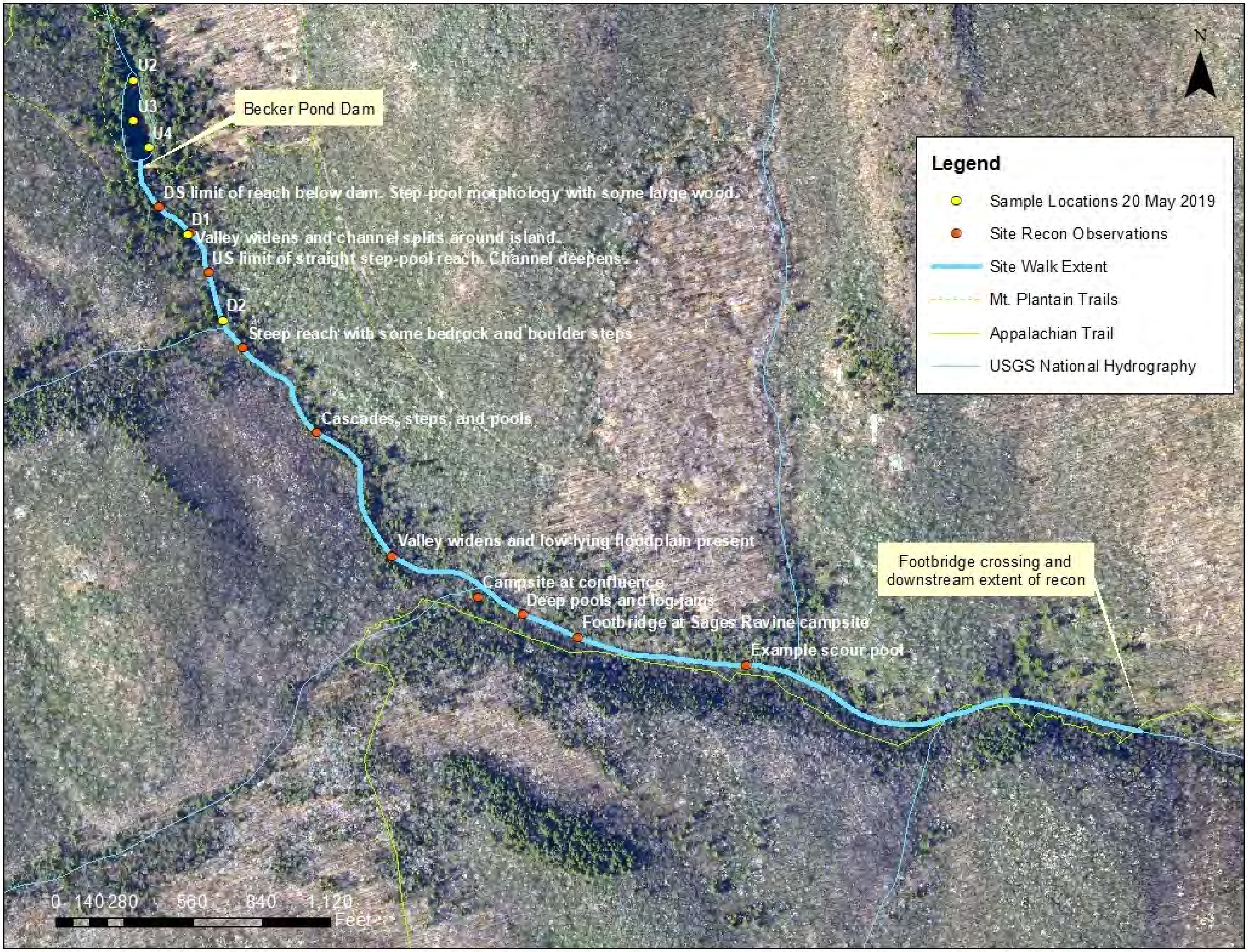

Figure 6. Map of reconnaissance survey extent

Figure 7. Looking upstream at the reach immediately downstream of the dam

Figure 8. Straight reach with relatively deep pools

Figure 9. Steep reach characterized by cascades, steps, and pools

Downstream, before the channel enters Sages Ravine, the valley widens and low-lying forest floodplain is present along the channel (Figure 10). This lower gradient reach is likely to be an area of deposition following dam removal, with possible permanent deposition on the floodplain and in low-energy areas of the channel.

An unofficial campsite is present on the top of the right bank at a tributary confluence and where the Appalachian Trail descends into the valley. Between the confluence and the footbridge crossing at the Sages Ravine campsite, approximately 450 feet, there are a number of large and deep pools that may fill temporarily following dam removal. Some are associated with log jams, which create backwater conditions ideal for deposition (Figure 11).

At the Sages Ravine campsite, large boulders constrain the flow and create turbulence that should help keep pools scoured out (Figure 12). Deposition may occur along the channel periphery on existing gravel and cobble bars. A number of what are likely popular swimming holes are present downstream of the campsite where the Appalachian Trail runs alongside the creek. The deepest pools are located immediately downstream of bedrock or boulder constrictions that create cascades and falls, causing turbulence that produces scour (Figure 13). While there may be deposition at the tails of these scour pools, some pool depth is likely to be maintained at the toes of the cascades and falls where turbulence is greatest.

The cascades and falls are interspersed with lower gradient cross sections where gravel and cobble have been deposited on the bed of the channel (Figure 14). These sections are likely to experience fining of the bed material and localized deposition in low-energy areas such as eddies.

The nearest downstream infrastructure is located approximately 1 mile downstream of the end of our survey where the unnamed brook crosses Underhill Road (State Route 41). In addition to the fact that the volume of impounded sediment is relatively small, our survey indicates that the brook between the dam and the crossing has sufficient roughness and opportunity for sorting and dispersing of sediment that is mobilized from the former impoundment. It is therefore unlikely that sediment pulses would be transported to the crossing as coherent sediment waves and thus, the risk of substantial impacts is low.

Figure 10. Low-lying floodplain on forest floor where valley widens

Figure 11. Large pool upstream of log jam

Figure 12. Looking downstream along reach at Sages Ravine campsite

Figure 13. Cascade caused by bedrock constriction and downstream pool

Figure 14. Cross section with coarse alluvium deposited on the bed

Summary and Recommendations

As discussed in the previous section, the total mass of impounded sediment constitutes up to approximately 70% of the estimated average annual suspended sediment load of the brook and 5% of the estimated annual suspended sediment load of Schenob Brook. These ratios suggest that the probability of sediment-related impacts along the unnamed brook is small, according to guidelines published by the U.S. Bureau of Reclamation[5]. The same guidelines indicate that the probability of sediment-related impacts along the larger Schenob Brook is negligible.

Material stored within the impoundment and mobilized following dam removal would be dispersed by the brook downstream of the dam because flow competence and transport capacity are generally high relative to the size and volume of the impounded sediment. Given the sandy nature of the material and the characteristics of the channel and valley, the material would likely be transported intermittently with temporary storage in pools, upstream of log jams, on bars, and in other low-velocity areas. Thus, the primary impacts of sediment pulses are likely to include filling of pools, fining of the channel bed, and burial of other habitat features and/or aquatic species that cannot quickly mobilize and adapt to rapidly changing conditions. Most deposition is likely to be temporary; however, permanent deposition of a portion of the mobilized sediment may occur in secondary channels and low-lying floodplain areas where the valley widens locally. These effects would likely decrease with time and with distance downstream as the inputs of sediment are attenuated through repeated deposition and erosion.

The size of the sediment waves, scale of sediment-related impacts, and the length of time required to disperse the material and move it through the system would depend on the timing, magnitude, frequency, and duration of flow events following dam removal and the extent to which sediment is eroded from the former impoundment. Given the shallow depths of impounded sediment, the risk of a steep headcut forming is considered low and therefore, release into the unnamed brook is expected to be somewhat gradual, with mobilization occurring over a period of time. Under the right conditions, some sediment may stabilize in place as vegetation establishes within the former impoundment.

Taking into account the relatively small volume of impounded sediment and the above anticipated impacts and processes, we propose to continue pursuing passive release at this site. Passive release has formed part of the sediment management approach for a number of recent dam removal projects in Massachusetts, including the 2017-18 West Britannia Dam Removal on the Mill River in Taunton (approximately 1,500 to 2,800 cubic yards passive release) and the 2017-18 Barstowe's Pond Dam Removal on the Cotley River in Taunton (approximately 5,200 cubic yards passive release). At those locations similar to at Becker Pond, other sediment management options were considered and passive release was recommended following an assessment of risk associated with the nature,

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[5] U.S. Bureau of Reclamation, 2017. Dam Removal Analysis Guidelines for Sediment. Advisory Committee on Water Information, Subcommittee on Sedimentation, U.S. Department of the Interior, Bureau of Reclamation, December 2017.

quantity, and quality of the impounded sediment in the context of the affected river system. Passive release must be coordinated with agencies to minimize the impact to aquatic organisms. Construction activities must be scheduled to avoid applicable time-of-year restrictions.

Appendix A – Due Diligence Review

Massachusetts Department of Fish and Game
Division of Ecological Restoration
Invested in Nature and Community

Beth Lambert, Director
Hunt Durey, Deputy Director

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Kathleen A. Theoharides
Secretary
Ronald S. Amidon
Commissioner
Mary-Lee King
Deputy Commissioner

Becker Pond Dam Removal Project

Due Diligence Review

May 2019

1.0 Introduction: Project Purpose and Background

The Becker Pond Dam Removal Project is an aquatic habitat restoration project being undertaken by the The Nature Conservancy (TNC; dam owner), in partnership with the Commonwealth of Massachusetts Department of Fish and Game, Division of Ecological Restoration (DER). The dam, which is also known as the Dombrowski Pond Dam, is located within TNC's 800-acre Mount Plantain Preserve, in the Town of Mount Washington, Berkshire County, Massachusetts. The dam is situated near the headwaters of an unnamed tributary of Schenob Brook, which is a tributary of the Housatonic River.

The dam was constructed by the former owners of the property, the Dombrowski family, in the 1930's for personal use. When TNC purchased the property in 1999, the condition of the dam had deteriorated to the point that it was clear that the dam would have to be removed or repaired in the near future. A dam inspection conducted by Fuss and O'Neill in 2016 revealed the dam was in poor condition and a safety hazard in part due to partial failure of the left training wall (Inter-Fluve, Inc., 2018). The results of this report led TNC to pursue dam removal, which will ultimately eliminate the safety hazard posed by the dam and restore aquatic and hydrologic connectivity through the site. Removal will also improve habitat for brook trout (*Savelinus fontinalis*), improve climate resilience of a cold-water stream system, and reconnect the stream to its associated headwater wetlands.

In 2018, Inter-Fluve, Inc. (IFI) was retained by TNC to complete 30% design plans for the dam removal. This work included some initial tasks related to sediment management, including a desktop due diligence review, and sampling of the dam impoundment to estimate sediment volume, grain size, etc. The results of this work are documented in the *Becker Pond Dam 30% Design Memorandum* (Inter-Fluve, Inc., 2018).

As the project moves into the regulatory review phase, additional sediment sampling and testing is needed to satisfy various regulatory requirements, particularly, of Section 401 of the federal Clean Water Act (Act). In accordance with the sampling and analysis requirements for the evaluation of applications for dredging and dredged material management under the Act and implementing regulations (314 CMR 9.00 *et seq.*), an updated due diligence review has been conducted to assess the potential for oil or hazardous materials (OHM) as defined under 310 CMR 40.00 *et seq.* (Massachusetts Contingency Plan). The results of this effort are presented below.

2.0 Information Sources

The following sources were reviewed as part of the due diligence effort:

1. Previous due diligence review conducted by IFI and documented in the report entitled *Becker Pond 30% Design Memorandum* (Inter-Fluve, Inc., 2018);
2. Review of historical and contemporary maps and aerial photographs;
3. Review of Sanborn fire insurance maps;
4. Anecdotal information from the current landowner (TNC);
5. An inquiry with the Egremont Fire Department[1] and the Mt. Washington Board of Health;
6. US Environmental Protection Agency (EPA) List of Superfund NPL Sites in Massachusetts;
7. Review of the Massachusetts Department of Environmental Protection's (DEP) online Reportable Releases database;
8. Massachusetts Hazardous Waste Generators (RCRA);
9. DEP Groundwater Discharge Permits; and
10. Other online databases[1]:
    a. Underground Storage Tanks
    b. DEP 2012 Integrated List of Waters
    c. DEP BWP Major and Minor Facilities
    d. DEP Solid Waste Facilities (including landfills)
    e. DEP Tier Classified Chapter 21E Sites
    f. DEP Oil and/or Hazardous Material Sites with Activity and Use Limitations (AUL)
    g. Water Supply Protection Areas

The approximate extent of the upstream watershed and land use cover percentages were estimated using the USGS *StreamStats* application.

3.0 Results

3.1 Historic and Current Land Use

As noted in the introduction, Becker Pond Dam is located within TNC's 800-acre Mt. Plantain Preserve. As such, the area immediately surrounding the dam and impoundment is entirely forested. The closest developed parcel (190 East Street) is over 0.25 miles away. The upstream watershed is approximately 1.0 square mile in size (see watershed boundary maps in Appendix A), 80% of which is forested, 1.8% developed and an additional 0.05% impervious surface (Streamstats, 2019). Remaining area consists of wetland and agricultural fields. Developed parcels appear to be used as residences and/or for small-scale farming. Historical aerial photography (dating back to 1959) and topographic maps (dating back to 1888) suggest that current land use has not changed appreciably. Anecdotal information from the landowner indicates that Becker Pond Dam was constructed by the Dombrowski Family in the 1930's for "personal use," and there was no mill or other structure on site with the exception of a lean-to which has since been removed. This is corroborated by historical aerial photography and topographic mapping.

3.2 Summary of Findings

According to the databases reviewed as part of this due diligence effort, the Becker Pond sub-watershed does not contain any listed hazardous waste disposal sites ("Chapter 21e sites"), BWP Major and Minor Facilities,

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[1] Information obtained via MassGIS OLIVER Interactive Mapping Tool.

hazardous waste generators, solid waste facilities, groundwater discharge permits, integrated waters, AUL sites, water supply protection areas, and underground storage tanks. IFI (2018) previously identified two sites in the Town of Mount Washington, but both were outside of the project sub-watershed and both were given Release Action Outcome statements of “no significant risk”:

1. RTN 1-0015514 (2004): Near Hunts Pond, north of the project sub-watershed; and
2. RTN 1-0014693 (2003): At the intersection of East Street and Cross Road, approximately two miles north of the project sub-watershed.

DER review of the database found no other reportable releases of oil or hazardous materials.

It should be noted that Sanborn fire insurance atlases are not available due to the rural nature of the watershed. In addition, phone inquiries with the Egremont Fire Department[2] and the Mt. Washington Board of Health were made via phone on May 6, 2019, but neither call was returned. However, given the current and historic land use, there is a low potential for oil or hazardous materials to be present, and if any release met DEP reporting requirements, it would have been included in the DEP online database.

4.0 Conclusions

The results of the due diligence review suggest that there is a low potential for oil or hazardous materials to be present in the sediment proposed to be sampled in Becker Pond. No spills of oil or hazardous material have been reported within the sub-watershed. These results are consistent with previous due diligence review conducted by IFI in 2018. Future sediment sampling and testing should follow guidelines established in *401 Water Quality Certification for Discharge or Fill Material Dredging, and Dredged Material Disposal in Waters of the United States Within the Commonwealth* (314 CMR 9.00 *et seq*.). However, there is no evidence suggesting the need for analysis of any parameters beyond that specifically required under 314 CMR 9.07(2)6.

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[2] Egremont provides fire protection services to the Town of Mt. Washington.

References

401 Water Quality Certification for Discharge of Dredged or Fill Material, Dredging, and Dredged Material Disposal in Waters of the United States within the Commonwealth, 314 CMR 9.00 *et seq*. (2014).

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NETRONLINE. (2019). Historic Aerials Viewer. Accessed on May 14, 2019 from https://www.historicaerials.com/viewer.

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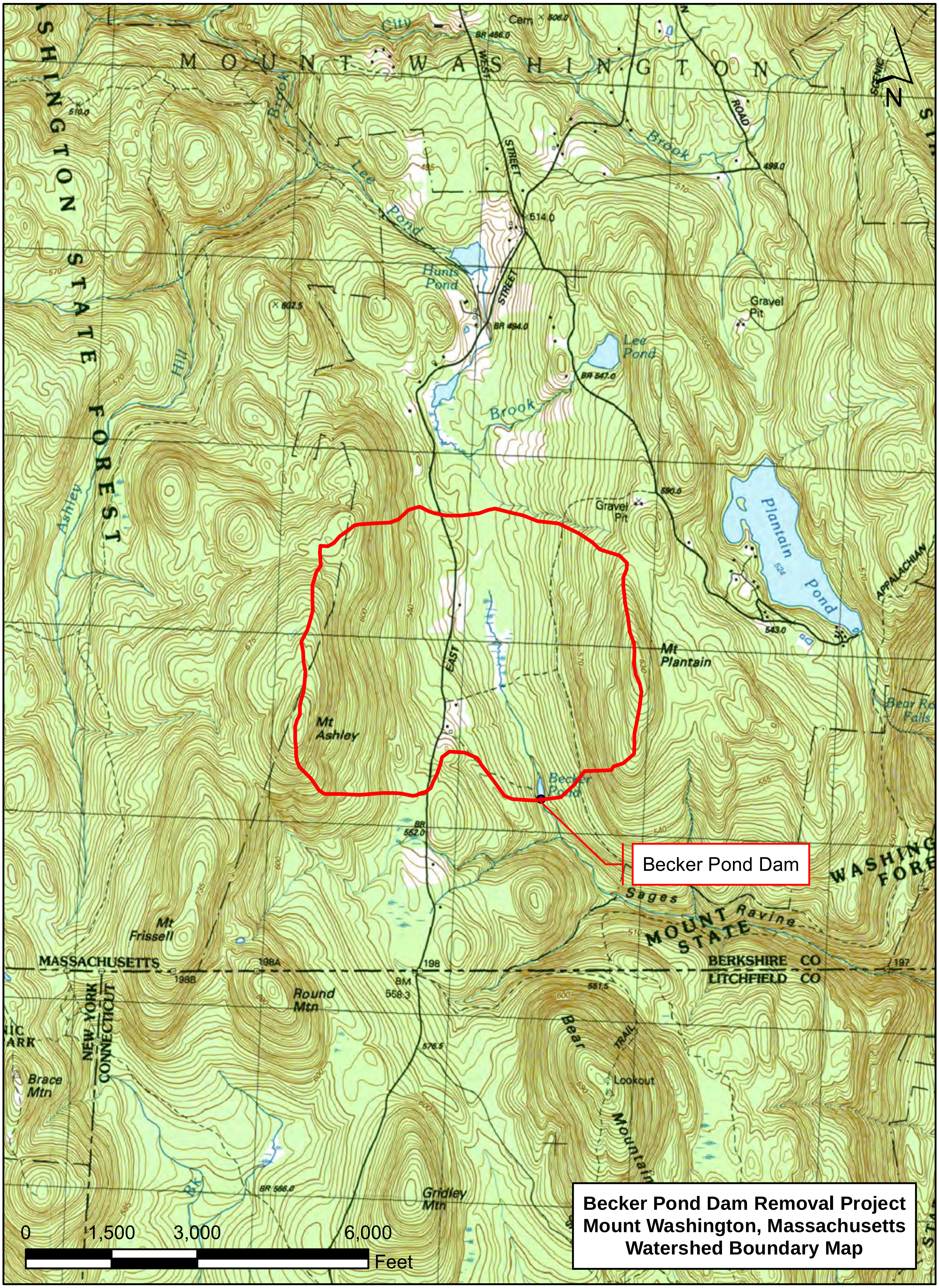
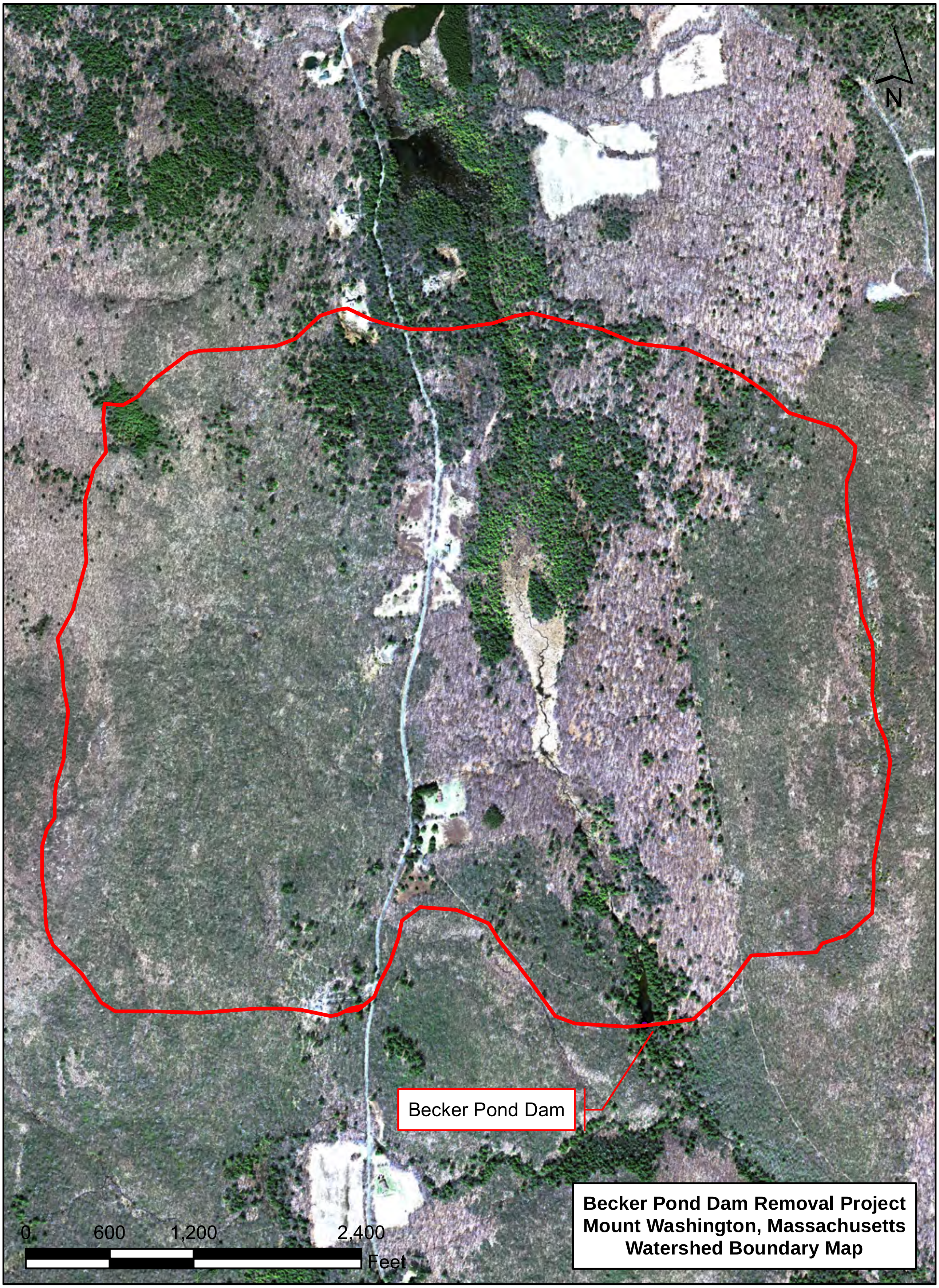
Appendix A

Watershed Boundary Maps



Becker Pond Dam Removal Project
Mount Washington, Massachusetts
Watershed Boundary Map

1. USGS Topo Map courtesy of MassGIS.



Becker Pond Dam Removal Project
Mount Washington, Massachusetts
Watershed Boundary Map

1. Orthophotography courtesy of MassGIS.

Appendix B – Sediment Sampling Plan

Massachusetts Department of Fish and Game
Division of Ecological Restoration
Invested in Nature and Community

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Hunt Durey, Deputy Director

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Kathleen A. Theoharides
Secretary
Ronald S. Amidon
Commissioner
Mary-Lee King
Deputy Commissioner

Becker Pond Dam Removal Project

Sediment Sampling and Analysis Plan

May 2019

1.0 Introduction: Project Purpose and Background

The Becker Pond Dam Removal Project is an aquatic habitat restoration project being undertaken by the The Nature Conservancy (TNC; dam owner), in partnership with the Commonwealth of Massachusetts Department of Fish and Game, Division of Ecological Restoration (DER). The dam, which is also known as the Dombrowski Pond Dam, is located within TNC's 800-acre Mount Plantain Preserve, in the Town of Mount Washington, Berkshire County, Massachusetts. The dam is situated near the headwaters of an unnamed tributary of Schenob Brook, which is a tributary of the Housatonic River.

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As the project moves into the regulatory review phase, additional sediment sampling and testing is needed to satisfy various regulatory requirements, particularly, of Section 401 of the federal Clean Water Act. This sampling plan builds on IFI's previously completed work and seeks to address additional sediment collection and testing needs. Data collected through this process will provide information on the sediments within, and immediately upstream and downstream of, the impoundment, and will help guide future sediment management decisions. To support this sampling plan, a limited due diligence study was performed by DER in accordance with the guidance set forth in 314 CMR 9.07(2). This study indicates that there are limited potential sources of contamination within the Becker Pond Dam sub-watershed, and corroborates previous work completed by IFI (Massachusetts Division of Ecological Restoration, 2019).

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2.0 Sediment Sampling Plan

This sediment sampling plan was developed by DER to guide sediment sampling work being performed as part of the Becker Pond Dam Removal Project[1]. This plan incorporates requirements and guidance presented in *Methods for Collection, Storage, and Manipulation of Sediments for Chemical and Toxicological Analysis: Technical Manual (EPA-823-B-01-002)* (U.S. Environmental Protection Agency [USEPA]), 314 CMR 9.07 (*401 Water Quality Certification*) and DEP interim Policy #COMM-94-007 (*Dredged Sediment Reuse and Disposal*).

2.1 Sediment Sampling

IFI has previously estimated the volume of impounded sediment to be less than 1,500 cubic yards (CY), with grain sizes consisting of primarily sand with some gravel and fines (Inter-Fluve, 2018). Three (3) core samples will be taken at representative locations distributed along the path of the proposed channel and future floodplain within the impoundment. In addition, three (3) grab samples will be collected. The purpose of the grab sampling is to characterize mobile material already moving through the system, conditions within the active biological layer, and downstream receiving areas. Approximate sample locations are shown on the attached figure (see Appendix A), and include the following:

1. One (1) grab sample in depositional area upstream of the existing impoundment and footbridge;
2. Two (2) core samples within the thalweg of the proposed channel;
3. One (1) core sample within the area of future floodplain; and
4. Two (2) grab samples within depositional areas downstream of the dam and impoundment area.

Exact locations of these samples will be determined in the field. The following sections outline the general equipment and procedures that will be followed to obtain the sediment samples identified above.

2.2 Equipment and Materials

The following equipment will be utilized as part of the sediment collection work:

- Stainless Steel AMS® (or similar)Extendable Core Sampler
- Stainless Steel Spade
- Stainless Steel Mixing Bowls and Spoons
- Laboratory-Supplied Sample Containers
- Sample Labels
- Nitrile Gloves
- Decontamination Liquids
- Logbook and Sampling Data Forms
- Cooler and Ice
- Camera
- Chest Waders (with Hip-Belt) or Hip Boots
- Small boat or canoe
- Life Preservers

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[1] While DER has completed due diligence and this sediment sampling plan, IFI will be managing the actual sediment sampling, testing, and subsequent reporting.

2.3 Equipment Decontamination Procedures

Sediment sampling equipment will be decontaminated before use to prevent foreign contamination of the sample. The following procedures will be followed:

1. Rinse equipment of debris and remnant particles prior to cleaning
2. Wash and scrub with detergent (e.g., liquinox, a laboratory grade, non-phosphate detergent)
3. Rinse with tap water
4. Rinse with deionized water
5. Air dry
6. Rinse with pesticide-grade methanol
7. Air dry

If equipment is decontaminated prior to entering the field, the sampling equipment will be wrapped in aluminum foil (shiny side out) to protect against ambient dust and vapors.

2.4 Sediment Sample Collection

The goal of sample collection is to obtain a sediment samples that are representative of sedimented material. Disposable nitrile gloves will be worn during sediment sampling and will be discarded after collecting and processing each sediment sample.

Sediment cores will be collected from a boat or canoe using a hand core sampler and only vertically compositing (mixing) each core. No horizontal compositing (mixing of separate cores) is proposed, unless visual or olfactory evidence in the field suggests a distinct layer of obvious pollution. Each sediment sample core will extend to the original reservoir bottom grade at that location. If the sediment deposits are too thin (e.g., less than one inch) to obtain a sample, an alternative sampling location may be selected.

Sediment grab samples to be collected from the channel upstream and downstream of the impoundment will be collected by wading and with a stainless steel spade or other sampler. Grab samples will be analyzed individually and not composited.

Upon retrieval of the sampler, the sediment sample will be placed into a clean (i.e., decontaminated) stainless steel bowl and thoroughly homogenized with a stainless steel spoon. Pre-cleaned sampling containers provided by the laboratory will then be filled with the sediment following homogenization of the sample such that no headspace is present. Each sample container will be labeled with the sample identification (ID), time, date, and sample location. Samples will be placed in a cooler on ice for transport to the laboratory.

A sample description, which includes information related to the sample ID, sample location, sediment descriptors (e.g., texture, color, water depth to substrate, depth of sediment layer, and visual moisture content), as well as other pertinent data regarding the sampling event will be recorded in a field notebook or on a data sheet. Copies of field notes or forms will be maintained in the project file.

3.0 Sample Handling

3.1 Sample Documentation

Chain-of-custody forms will be filled out accordingly and be placed inside the cooler in a plastic freezer bag (or per laboratory requirements). Chain-of-custody forms will accompany the samples during shipping and storage.

3.2 Sample Storage and Shipping

Following collection, sample containers will be placed in a cooler with enough ice to maintain a temperature of 4 degrees Celsius. The cooler containing sample containers will be delivered to the laboratory as per laboratory requirements.

4.0 Analytical Evaluation and Reporting

4.1 Sample Analyses

Sediment samples will be analyzed by a Massachusetts-certified laboratory for the parameters and reporting limits listed in 314 CMR 9.07(2)(b)(6). Proposed testing parameters include the following:

- Grain Size (Sieve Nos. 4, 10, 40, 60, and 200)
- Total Organic Carbon (TOC)
- Percent Water
- Total Metals including Arsenic, Cadmium, Chromium (total and VI), Copper, Lead, Mercury, Nickel, and Zinc.
- Polycyclic Aromatic Hydrocarbons (PAHs)
- Polychlorinated Biphenyls (PCBs)
- Extractable Petroleum Hydrocarbons (EPHs)

Laboratory analyses of samples will be conducted in accordance with 314 CMR 9.07(2) testing methods and will meet minimum reporting limits/detection levels to the maximum extent possible.

4.2 Analytical Evaluation

The results of the laboratory analyses will be reviewed, and will include an evaluation of the analytical sample-specific method detection limits (MDL) and reporting limits (RL) as provided by the laboratory. Data will be evaluated against ecological risk-based media standards using the applicable criteria such as the Massachusetts Contingency Plan (MCP; 310 CMR 40.00) Method 1 Standards and the 401 Water Quality Standards. The analytical evaluation will involve assessing any potential impacts of contaminated sediments on the aquatic resources including the corresponding media-specific Threshold Effect Levels (screening values) and Probable Effect Levels (effects values).

4.3 Reporting

A summary report will be provided based on these data and the risk-based evaluation. Data will be compiled and presented in tabular form, and will include the results compared to the appropriate criteria.

References

401 Water Quality Certification for Discharge of Dredged or Fill Material, Dredging, and Dredged Material Disposal in Waters of the United States within the Commonwealth, 314 CMR 9.00 *et seq*. (2014).

Inter-Fluve, Inc. (2018). *Becker Pond Dam 30% Design Memorandum*. Cambridge, Massachusetts.

Massachusetts Contingency Plan, 310 CMR 40.00 *et seq*. (2014).

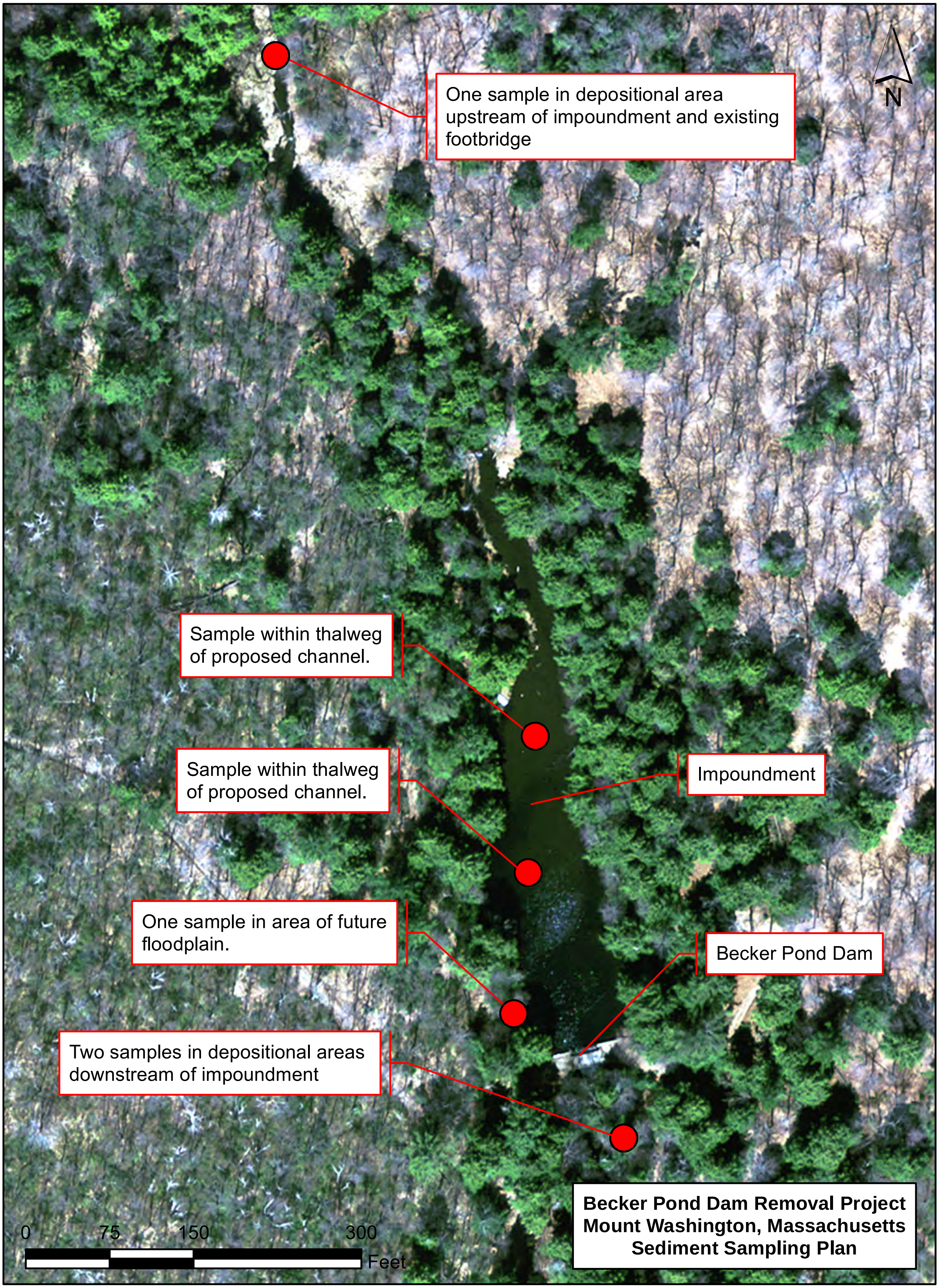
Massachusetts Department of Environmental Protection. (1995). *Interim Policy COMM-94-007: Dredged Sediment Reuse or Disposal*. Retrieved May 14, 2019 from https://www.mass.gov/guides/interim-policy-comm-94-007-dredged-sediment-reuse-or-disposal.

Massachusetts Division of Ecological Restoration. (2019). *Becker Pond Dam Removal Project: Due Diligence Review*. Boston, Massachusetts.

United States Environmental Protection Agency. (2001). *Methods for Collection, Storage, and Manipulation of Sediments for Chemical and Toxicological Analysis: Technical Manual (EPA-823-B-01-002)*. Washington, D.C.

Appendix A

Sampling Map



Becker Pond Dam Removal Project
Mount Washington, Massachusetts
Sediment Sampling Plan

1. All sampling locations are approximate. Exact locations will be field determined by consultant.
2. Orthophotography courtesy of MassGIS.

Appendix C – Sediment Testing Results

Recommended Analyses for Dam Removal Projects		**MA DEP BWSC Soil Standards and Guidance Values (columns C-F)**				**Sediment Thresholds (columns G-H)**		**Dam Impoundment Samples**			**Downstream Samples Results**		**Upstream Samples**	**Summary Calculations**				
Parameters	Units	Cleanup Standard	"Natural Soil"	"Urban Soil"	Upper Concentration	Freshwater	Marine	US2	US3	US4	D1	D2	US1	Impoundment			Downstream	Upstream
Metals, Total [mg/kg or ppm]		(S-1/GW-1)	Background	Backgrond	Limit (UCL)	PEC	PEL	*5/20/2019*	*5/20/2019*	*5/20/2019*	*5/20/2019*	*5/20/2019*	*5/20/2019*	Min	Max	Mean	Mean	Mean
Arsenic (ppm)	mg/kg (ppm)	20	20	20	500	33	41.6	5.4	5	3	4.4	2.7	2.1	3	5.4	4	3.6	2.1
Cadmium (ppm)	mg/kg (ppm)	70	2	3	1,000	4.98	4.2	1.1	1.2	0.47	0.97	0.32	0.22	0.47	1.2	0.9	0.65	0.22
Chromium (TOTAL)(ppm)	mg/kg (ppm)	100	30	40	2,000	111	160.4	17	18	8.3	9	5.2	9	8.3	18	14	7	9
Chromium VI (ppm)	mg/kg (ppm)	100	30	40	2,000													
Copper (ppm)	mg/kg (ppm)		40	200		149	108.2	15	15	11	10	5	4.5	11	15	14	8	4.5
Lead (ppm)	mg/kg (ppm)	200	100	600	6,000	128	112.2	43	42	25	21	7.7	10	25	43	37	14	10
Mercury (ppm)	mg/kg (ppm)	20	0	1	300	1.06	0.7	0.08	0.2	0.065	0.07	0.065	0.065	0.065	0.2	0.1	0.07	0.065
Nickel (ppm)	mg/kg (ppm)	600	20	30	10,000	48.6	42.8	31	22	12	19	12	14	12	31	22	16	14
Zinc (ppm)	mg/kg (ppm)	1,000	100	300	10,000	459	271.0	150	120	66	95	40	64	66	150	112	68	64
PAHs (ug/kg or ppb)																		
Anthracene (ppb)	ug/kg (ppb)	1,000,000	1,000	4,000	10,000,000	845	245.0	9	8	5.5	6	2.6	3.6	5.5	9	8	4	3.6
Benzo[a]anthracene (ppb)	ug/kg (ppb)	7,000	2,000	9,000	3,000,000	1050	693.0	22	22	19	6	2.6	3.6	19	22	21	4	3.6
Benzo[a]pyrene (ppb)	ug/kg (ppb)	2,000	2,000	7,000	300,000	1450	763.0	47	37	28	16	2.6	3.6	28	47	37	9	3.6
Benzo[b]fluoranthene (ppb)	ug/kg (ppb)	7,000	2,000	8,000	3,000,000	13400		47	78	57	38	2.6	3.6	47	78	61	20	3.6
Chrysene (ppb)	ug/kg (ppb)	70,000	2,000	7,000	10,000,000	1290	846.0	27	40	34	28	2.6	3.6	27	40	34	15	3.6
Dibenz[a,h]anthracene (ppb)	ug/kg (ppb)	700	500	1,000	300,000	260	134.6	9	8	5.5	6	2.6	3.6	5.5	9	8	4	3.6
Fluoranthene (ppb)	ug/kg (ppb)	1,000,000	4,000	10,000	10,000,000	2230	1,493.5	39	70	52	36	2.6	3.6	39	70	54	19	3.6
Fluorene (ppb)	ug/kg (ppb)	1,000,000	1,000	2,000	10,000,000	536	144.4	9	8	5.5	6	2.6	3.6	5.5	9	8	4	3.6
Naphthalene (ppb)	ug/kg (ppb)	4,000	500	1,000	10,000,000	561	390.6	9	8	5.5	6	2.6	3.6	5.5	9	8	4	3.6
Phenanthrene (ppb)	ug/kg (ppb)	10,000	3,000	20,000	10,000,000	1170	543.5	40	66	42	34	9	12	40	66	49	22	12
Pyrene (ppb)	ug/kg (ppb)	1,000,000	4,000	20,000	10,000,000	1520	1,397.6	43	63	48	38	2.6	3.6	43	63	51	20	3.6
Total PAHs (ppb)	ug/kg (ppb)	4,100,700	22,000	89,000	76,600,000	22800	16,770.4	301	408	302	220	35	48	301	408	337	128	48
PCBs (mg/kg or ppm)																		
Total PCBs (ppm)	mg/kg (ppm)	1			100	0.676	0.2	3.15	2.7	2.25	2.25	0.9	1.35	2.25	3.15	2.7	1.6	1.35
Pesticides (ug/kg)																		
2-4' DDD (ppb)	ug/kg (ppb)																	
4-4' DDD (ppb)	ug/kg (ppb)	8,000			600,000		7.81	90	75	55	60	26	35.5	55	90	73	43	35.5
Sum DDD (ppb)	ug/kg (ppb)					28												
2-4' DDE (ppb)	ug/kg (ppb)																	
4-4' DDE (ppb)	ug/kg (ppb)	6,000			600,000		374.00	90	75	55	60	26	35.5	55	90	73	43	35.5
Sum DDE (ppb)	ug/kg (ppb)					31.3												
2-4' DDT (ppb)	ug/kg (ppb)																	
4-4' DDT (ppb)	ug/kg (ppb)	6,000			600,000		4.77	90	75	55	60	26	35.5	55	90	73	43	35.5
Sum DDT (ppb)	ug/kg (ppb)					62.9												
Total DDTs (ppb)	ug/kg (ppb)					572	51.70											
Chlordane (ppb)	ug/kg (ppb)	5,000			600,000	17.6	4.79											
Dieldrin (ppb)	ug/kg (ppb)	80			30,000	61.8	4.30	90	75	55	60	26	35.5	55	90	73	43	35.5
Endrin (ppb)	ug/kg (ppb)	10,000			200,000	207		90	75	55	60	26	35.5	55	90	73	43	35.5
gamma-BHC (Lindane) (ppb)	ug/kg (ppb)					4.99	0.99	90	75	55	60	26	35.5	55	90	73	43	35.5
Heptachlor epoxide (ppb)	ug/kg (ppb)	100			10,000	16	2.74	90	75	55	60	26	35.5	55	90	73	43	35.5
TPH and EPH (mg/kg or ppm)																		
Total Petrolem Hydrocarbons [TPH] (ppm)	mg/kg (ppm)	1,000			10,000													
C9-C18 Aliphatic Hydrocarbons (ppm)	mg/kg (ppm)	1,000			20,000			44.5	38	27	32	12.5	18	27	44.5	37	22	18
C19-C36 Aliphatic Hydrocarbons (ppm)	mg/kg (ppm)	3,000			20,000			44.5	38	27	32	12.5	18	27	44.5	37	22	18
C11-C22 Aromatic Hydrocarbons (ppm)	mg/kg (ppm)	1,000			10,000			210	110	64	69	12.5	46	64	210	128	41	46
Physical Characteristics																		
Total Organic Carbon (%)	%							13	13	11	3	0.5	1.5	11	13	12	1.8	1.5
Percent Water (%)	%							78.2	74.5	64.8	67.9	24.8	44.5	65	78	73	46.4	44.5
Sieve No. 4 (% passing)	% passing							86	96	73	62	72	88	73	96	85	67	88
Sieve No. 10 (% passing)	% passing							52	91	45	49	52	68	45	91	63	50.5	68
Sieve No. 40 (% passing)	% passing							22	64	19	18	9	22	19	64	35	13.5	22
Sieve No. 60 (% passing)	% passing							17	57	15	12	4	13	15	57	30	8	13
Sieve No. 200 (% passing)	% passing							7.8	36.3	8.3	4.4	1.5	4.8	8	36	17	3	4.8

COMMONWEALTH OF MASSACHUSETTS
Division of Ecological Restoration

Notes:
Green text indicates results below detection levels.

Questions, comments, corrections?
Please contact Alex Hackman, MA DFG DER
alex.hackman@state.ma.us / 617-626-1548

Laboratory Report

Absolute Resource associates
124 Heritage Avenue Portsmouth NH 03801

Candice Constantine
Inter-Fluve Inc
220 Concord Avenue
#2
Cambridge, MA 02138

PO Number: None
Job ID: 48753
Date Received: 5/22/19

Project: Becker Pond Dam Removal

Attached please find results for the analysis of the samples received on the date referenced above.

Unless otherwise noted in the attached report, the analyses performed met the requirements of Absolute Resource Associates' Quality Assurance Plan. The Standard Operating Procedures are based upon USEPA SW-846, USEPA Methods for Chemical Analysis of Water and Wastewater, Standard Methods for the Examination of Water and Wastewater and other recognized methodologies. The results contained in this report pertain only to the samples as indicated on the chain of custody.

Absolute Resource Associates maintains certification with the agencies listed below.

We appreciate the opportunity to provide laboratory services. If you have any questions regarding the enclosed report, please contact the laboratory and we will be glad to assist you.

Sincerely,
Absolute Resource Associates

Jennif Z Lowe

Jennifer Lowe
Laboratory Manager

Date of Approval: 6/12/2019
Total number of pages: 39

Absolute Resource Associates Certifications

New Hampshire	1732	Massachusetts	M-NH902
Maine	NH903		

Project ID: Becker Pond Dam Removal

Sample Association Table

Field ID	Matrix	Date-Time Sampled	Lab#	Analysis
D1	Solid	5/20/2019 12:15	48753-001	
				Arsenic in solids by 6020
				Cadmium in solids by 6020
				Chromium in solids by 6020
				Copper in solids by 6020
				EPH in solids by MADEP Method
				Grain Size - Hydrometer (subcontract)
				Lead in solids by 6020
				Mercury in solids by 7471
				Nickel in solids by 6020
				PAHs in solid by 8270
				PCBs in soil by 8082
				Percent Solids in soil by SM2540B,G
				Pesticides in soil by 8081
				Shipping & Handling to Subcontract Lab
				Solid Digestion for ICPMS Analysis
				TOC in Solid by 9060A (subcontract)
				Zinc in solids by 6020
D2	Solid	5/20/2019 12:30	48753-002	
				Arsenic in solids by 6020
				Cadmium in solids by 6020
				Chromium in solids by 6020
				Copper in solids by 6020
				EPH in solids by MADEP Method
				Grain Size - Hydrometer (subcontract)
				Lead in solids by 6020
				Mercury in solids by 7471
				Nickel in solids by 6020
				PAHs in solid by 8270
				PCBs in soil by 8082
				Percent Solids in soil by SM2540B,G
				Pesticides in soil by 8081
				Solid Digestion for ICPMS Analysis
				TOC in Solid by 9060A (subcontract)
				Zinc in solids by 6020
U1	Solid	5/20/2019 12:45	48753-003	
				Arsenic in solids by 6020
				Cadmium in solids by 6020
				Chromium in solids by 6020
				Copper in solids by 6020
				EPH in solids by MADEP Method
				Grain Size - Hydrometer (subcontract)
				Lead in solids by 6020
				Mercury in solids by 7471
				Nickel in solids by 6020
				PAHs in solid by 8270
				PCBs in soil by 8082
				Percent Solids in soil by SM2540B,G
				Pesticides in soil by 8081
				Solid Digestion for ICPMS Analysis
				TOC in Solid by 9060A (subcontract)
				Zinc in solids by 6020

Project ID: Becker Pond Dam Removal

Sample Association Table

Field ID	Matrix	Date-Time Sampled	Lab#	Analysis
U2	Solid	5/20/2019 18:00	48753-004	Arsenic in solids by 6020 Cadmium in solids by 6020 Chromium in solids by 6020 Copper in solids by 6020 EPH in solids by MADEP Method Grain Size - Hydrometer (subcontract) Lead in solids by 6020 Mercury in solids by 7471 Nickel in solids by 6020 PAHs in solid by 8270 PCBs in soil by 8082 Percent Solids in soil by SM2540B,G Pesticides in soil by 8081 Solid Digestion for ICPMS Analysis TOC in Solid by 9060A (subcontract) Zinc in solids by 6020
U3	Solid	5/20/2019 18:30	48753-005	Arsenic in solids by 6020 Cadmium in solids by 6020 Chromium in solids by 6020 Copper in solids by 6020 EPH in solids by MADEP Method Grain Size - Hydrometer (subcontract) Lead in solids by 6020 Mercury in solids by 7471 Nickel in solids by 6020 PAHs in solid by 8270 PCBs in soil by 8082 Percent Solids in soil by SM2540B,G Pesticides in soil by 8081 Solid Digestion for ICPMS Analysis TOC in Solid by 9060A (subcontract) Zinc in solids by 6020
U4	Solid	5/20/2019 19:00	48753-006	Arsenic in solids by 6020 Cadmium in solids by 6020 Chromium in solids by 6020 Copper in solids by 6020 EPH in solids by MADEP Method Grain Size - Hydrometer (subcontract) Lead in solids by 6020 Mercury in solids by 7471 Nickel in solids by 6020 PAHs in solid by 8270 PCBs in soil by 8082 Percent Solids in soil by SM2540B,G Pesticides in soil by 8081 Solid Digestion for ICPMS Analysis TOC in Solid by 9060A (subcontract) Zinc in solids by 6020

Project ID: Becker Pond Dam Removal
Job ID: 48753

Sample#: 48753-001
Sample ID: D1
Matrix: Solid   Percent Dry: 32.1% Results expressed on a dry weight basis.
Sampled: 5/20/19 12:15

Parameter	**Result**	**Reporting Limit**	**Units**	**Instr Dil'n Factor**	**Analyst**	**Prep Date**	**Batch**	**Analysis Date**	**Analysis Time**	**Reference**
naphthalene	< 0.012	0.012	ug/g	1	CL	6/3/19	11730	6/6/19	13:37	SW3550C8270D
2-methylnaphthalene	< 0.012	0.012	ug/g	1	CL	6/3/19	11730	6/6/19	13:37	SW3550C8270D
acenaphthylene	< 0.012	0.012	ug/g	1	CL	6/3/19	11730	6/6/19	13:37	SW3550C8270D
acenaphthene	< 0.012	0.012	ug/g	1	CL	6/3/19	11730	6/6/19	13:37	SW3550C8270D
dibenzofuran	< 0.012	0.012	ug/g	1	CL	6/3/19	11730	6/6/19	13:37	SW3550C8270D
fluorene	< 0.012	0.012	ug/g	1	CL	6/3/19	11730	6/6/19	13:37	SW3550C8270D
phenanthrene	**0.034** B	0.012	ug/g	1	CL	6/3/19	11730	6/6/19	13:37	SW3550C8270D
anthracene	< 0.012	0.012	ug/g	1	CL	6/3/19	11730	6/6/19	13:37	SW3550C8270D
fluoranthene	**0.036**	0.012	ug/g	1	CL	6/3/19	11730	6/6/19	13:37	SW3550C8270D
pyrene	**0.038**	0.012	ug/g	1	CL	6/3/19	11730	6/6/19	13:37	SW3550C8270D
benzo(a)anthracene	< 0.012	0.012	ug/g	1	CL	6/3/19	11730	6/6/19	13:37	SW3550C8270D
chrysene	**0.028**	0.012	ug/g	1	CL	6/3/19	11730	6/6/19	13:37	SW3550C8270D
benzo(b)fluoranthene	**0.038**	0.012	ug/g	1	CL	6/3/19	11730	6/6/19	13:37	SW3550C8270D
benzo(k)fluoranthene	**0.019**	0.012	ug/g	1	CL	6/3/19	11730	6/6/19	13:37	SW3550C8270D
benzo(a)pyrene	**0.016**	0.012	ug/g	1	CL	6/3/19	11730	6/6/19	13:37	SW3550C8270D
indeno(1,2,3-cd)pyrene	**0.012**	0.012	ug/g	1	CL	6/3/19	11730	6/6/19	13:37	SW3550C8270D
dibenzo(a,h)anthracene	< 0.012	0.012	ug/g	1	CL	6/3/19	11730	6/6/19	13:37	SW3550C8270D
benzo(g,h,i)perylene	**0.018**	0.012	ug/g	1	CL	6/3/19	11730	6/6/19	13:37	SW3550C8270D
Surrogate Recovery		**Limits**								
2-fluorobiphenyl SUR	**74**	43-116	%	1	CL	6/3/19	11730	6/6/19	13:37	SW3550C8270D
o-terphenyl SUR	**91**	33-141	%	1	CL	6/3/19	11730	6/6/19	13:37	SW3550C8270D

B = A low level of this analyte was also detected in the method blank.

Project ID: Becker Pond Dam Removal
Job ID: 48753

Sample#: 48753-002
Sample ID: D2
Matrix: Solid Percent Dry: 75.2% Results expressed on a dry weight basis.
Sampled: 5/20/19 12:30

		Reporting		**Instr Dil'n**		**Prep**		**Analysis**		
Parameter	**Result**	**Limit**	**Units**	**Factor**	**Analyst**	**Date**	**Batch**	**Date**	**Time**	**Reference**
naphthalene	< 0.0051	0.0051	ug/g	1	CL	6/3/19	11730	6/3/19	23:38	SW3550C8270D
2-methylnaphthalene	< 0.0051	0.0051	ug/g	1	CL	6/3/19	11730	6/3/19	23:38	SW3550C8270D
acenaphthylene	< 0.0051	0.0051	ug/g	1	CL	6/3/19	11730	6/3/19	23:38	SW3550C8270D
acenaphthene	< 0.0051	0.0051	ug/g	1	CL	6/3/19	11730	6/3/19	23:38	SW3550C8270D
dibenzofuran	< 0.0051	0.0051	ug/g	1	CL	6/3/19	11730	6/3/19	23:38	SW3550C8270D
fluorene	< 0.0051	0.0051	ug/g	1	CL	6/3/19	11730	6/3/19	23:38	SW3550C8270D
phenanthrene	**0.0090** B	0.0051	ug/g	1	CL	6/3/19	11730	6/3/19	23:38	SW3550C8270D
anthracene	< 0.0051	0.0051	ug/g	1	CL	6/3/19	11730	6/3/19	23:38	SW3550C8270D
fluoranthene	< 0.0051	0.0051	ug/g	1	CL	6/3/19	11730	6/3/19	23:38	SW3550C8270D
pyrene	< 0.0051	0.0051	ug/g	1	CL	6/3/19	11730	6/3/19	23:38	SW3550C8270D
benzo(a)anthracene	< 0.0051	0.0051	ug/g	1	CL	6/3/19	11730	6/3/19	23:38	SW3550C8270D
chrysene	< 0.0051	0.0051	ug/g	1	CL	6/3/19	11730	6/3/19	23:38	SW3550C8270D
benzo(b)fluoranthene	< 0.0051	0.0051	ug/g	1	CL	6/3/19	11730	6/3/19	23:38	SW3550C8270D
benzo(k)fluoranthene	< 0.0051	0.0051	ug/g	1	CL	6/3/19	11730	6/3/19	23:38	SW3550C8270D
benzo(a)pyrene	< 0.0051	0.0051	ug/g	1	CL	6/3/19	11730	6/3/19	23:38	SW3550C8270D
indeno(1,2,3-cd)pyrene	< 0.0051	0.0051	ug/g	1	CL	6/3/19	11730	6/3/19	23:38	SW3550C8270D
dibenzo(a,h)anthracene	< 0.0051	0.0051	ug/g	1	CL	6/3/19	11730	6/3/19	23:38	SW3550C8270D
benzo(g,h,i)perylene	< 0.0051	0.0051	ug/g	1	CL	6/3/19	11730	6/3/19	23:38	SW3550C8270D
Surrogate Recovery		**Limits**								
2-fluorobiphenyl SUR	**74**	43-116	%	1	CL	6/3/19	11730	6/3/19	23:38	SW3550C8270D
o-terphenyl SUR	**97**	33-141	%	1	CL	6/3/19	11730	6/3/19	23:38	SW3550C8270D

B = A low level of this analyte was also detected in the method blank.

Project ID: Becker Pond Dam Removal
Job ID: 48753

Sample#: 48753-003
Sample ID: U1
Matrix: Solid Percent Dry: 55.5% Results expressed on a dry weight basis.
Sampled: 5/20/19 12:45

Parameter	Result	Reporting Limit	Units	Instr Dil'n Factor	Analyst	Prep Date	Batch	Analysis Date	Analysis Time	Reference
naphthalene	< 0.0071	0.0071	ug/g	1	CL	6/3/19	11730	6/4/19	0:07	SW3550C8270D
2-methylnaphthalene	< 0.0071	0.0071	ug/g	1	CL	6/3/19	11730	6/4/19	0:07	SW3550C8270D
acenaphthylene	< 0.0071	0.0071	ug/g	1	CL	6/3/19	11730	6/4/19	0:07	SW3550C8270D
acenaphthene	< 0.0071	0.0071	ug/g	1	CL	6/3/19	11730	6/4/19	0:07	SW3550C8270D
dibenzofuran	< 0.0071	0.0071	ug/g	1	CL	6/3/19	11730	6/4/19	0:07	SW3550C8270D
fluorene	< 0.0071	0.0071	ug/g	1	CL	6/3/19	11730	6/4/19	0:07	SW3550C8270D
phenanthrene	**0.012** B	0.0071	ug/g	1	CL	6/3/19	11730	6/4/19	0:07	SW3550C8270D
anthracene	< 0.0071	0.0071	ug/g	1	CL	6/3/19	11730	6/4/19	0:07	SW3550C8270D
fluoranthene	< 0.0071	0.0071	ug/g	1	CL	6/3/19	11730	6/4/19	0:07	SW3550C8270D
pyrene	< 0.0071	0.0071	ug/g	1	CL	6/3/19	11730	6/4/19	0:07	SW3550C8270D
benzo(a)anthracene	< 0.0071	0.0071	ug/g	1	CL	6/3/19	11730	6/4/19	0:07	SW3550C8270D
chrysene	< 0.0071	0.0071	ug/g	1	CL	6/3/19	11730	6/4/19	0:07	SW3550C8270D
benzo(b)fluoranthene	< 0.0071	0.0071	ug/g	1	CL	6/3/19	11730	6/4/19	0:07	SW3550C8270D
benzo(k)fluoranthene	< 0.0071	0.0071	ug/g	1	CL	6/3/19	11730	6/4/19	0:07	SW3550C8270D
benzo(a)pyrene	< 0.0071	0.0071	ug/g	1	CL	6/3/19	11730	6/4/19	0:07	SW3550C8270D
indeno(1,2,3-cd)pyrene	< 0.0071	0.0071	ug/g	1	CL	6/3/19	11730	6/4/19	0:07	SW3550C8270D
dibenzo(a,h)anthracene	< 0.0071	0.0071	ug/g	1	CL	6/3/19	11730	6/4/19	0:07	SW3550C8270D
benzo(g,h,i)perylene	< 0.0071	0.0071	ug/g	1	CL	6/3/19	11730	6/4/19	0:07	SW3550C8270D
Surrogate Recovery		**Limits**								
2-fluorobiphenyl SUR	**71**	43-116	%	1	CL	6/3/19	11730	6/4/19	0:07	SW3550C8270D
o-terphenyl SUR	**97**	33-141	%	1	CL	6/3/19	11730	6/4/19	0:07	SW3550C8270D

B = A low level of this analyte was also detected in the method blank.

Project ID: Becker Pond Dam Removal
Job ID: 48753

Sample#: 48753-004
Sample ID: U2
Matrix: Solid Percent Dry: 21.8% Results expressed on a dry weight basis.
Sampled: 5/20/19 18:00

Parameter	Result	Reporting Limit	Units	Instr Dil'n Factor	Analyst	Prep Date	Batch	Analysis Date	Analysis Time	Reference
naphthalene	< 0.018	0.018	ug/g	1	CL	6/3/19	11730	6/6/19	16:34	SW3550C8270D
2-methylnaphthalene	< 0.018	0.018	ug/g	1	CL	6/3/19	11730	6/6/19	16:34	SW3550C8270D
acenaphthylene	< 0.018	0.018	ug/g	1	CL	6/3/19	11730	6/6/19	16:34	SW3550C8270D
acenaphthene	< 0.018	0.018	ug/g	1	CL	6/3/19	11730	6/6/19	16:34	SW3550C8270D
dibenzofuran	< 0.018	0.018	ug/g	1	CL	6/3/19	11730	6/6/19	16:34	SW3550C8270D
fluorene	< 0.018	0.018	ug/g	1	CL	6/3/19	11730	6/6/19	16:34	SW3550C8270D
phenanthrene	**0.040** B	0.018	ug/g	1	CL	6/3/19	11730	6/6/19	16:34	SW3550C8270D
anthracene	< 0.018	0.018	ug/g	1	CL	6/3/19	11730	6/6/19	16:34	SW3550C8270D
fluoranthene	**0.039**	0.018	ug/g	1	CL	6/3/19	11730	6/6/19	16:34	SW3550C8270D
pyrene	**0.043**	0.018	ug/g	1	CL	6/3/19	11730	6/6/19	16:34	SW3550C8270D
benzo(a)anthracene	**0.022**	0.018	ug/g	1	CL	6/3/19	11730	6/6/19	16:34	SW3550C8270D
chrysene	**0.027**	0.018	ug/g	1	CL	6/3/19	11730	6/6/19	16:34	SW3550C8270D
benzo(b)fluoranthene	**0.047**	0.018	ug/g	1	CL	6/3/19	11730	6/6/19	16:34	SW3550C8270D
benzo(k)fluoranthene	**0.030**	0.018	ug/g	1	CL	6/3/19	11730	6/6/19	16:34	SW3550C8270D
benzo(a)pyrene	**0.047**	0.018	ug/g	1	CL	6/3/19	11730	6/6/19	16:34	SW3550C8270D
indeno(1,2,3-cd)pyrene	**0.035**	0.018	ug/g	1	CL	6/3/19	11730	6/6/19	16:34	SW3550C8270D
dibenzo(a,h)anthracene	< 0.018	0.018	ug/g	1	CL	6/3/19	11730	6/6/19	16:34	SW3550C8270D
benzo(g,h,i)perylene	**0.039**	0.018	ug/g	1	CL	6/3/19	11730	6/6/19	16:34	SW3550C8270D
Surrogate Recovery		**Limits**								
2-fluorobiphenyl SUR	**69**	43-116	%	1	CL	6/3/19	11730	6/6/19	16:34	SW3550C8270D
o-terphenyl SUR	**87**	33-141	%	1	CL	6/3/19	11730	6/6/19	16:34	SW3550C8270D

B = A low level of this analyte was also detected in the method blank.

Project ID: Becker Pond Dam Removal
Job ID: 48753

Sample#: 48753-005
Sample ID: U3
Matrix: Solid Percent Dry: 25.5% Results expressed on a dry weight basis.
Sampled: 5/20/19 18:30

Parameter	**Result**	**Reporting Limit**	**Units**	**Instr Dil'n Factor**	**Analyst**	**Prep Date**	**Batch**	**Analysis Date**	**Time**	**Reference**
naphthalene	< 0.016	0.016	ug/g	1	CL	6/3/19	11730	6/6/19	16:04	SW3550C8270D
2-methylnaphthalene	< 0.016	0.016	ug/g	1	CL	6/3/19	11730	6/6/19	16:04	SW3550C8270D
acenaphthylene	< 0.016	0.016	ug/g	1	CL	6/3/19	11730	6/6/19	16:04	SW3550C8270D
acenaphthene	< 0.016	0.016	ug/g	1	CL	6/3/19	11730	6/6/19	16:04	SW3550C8270D
dibenzofuran	< 0.016	0.016	ug/g	1	CL	6/3/19	11730	6/6/19	16:04	SW3550C8270D
fluorene	< 0.016	0.016	ug/g	1	CL	6/3/19	11730	6/6/19	16:04	SW3550C8270D
phenanthrene	**0.066** B	0.016	ug/g	1	CL	6/3/19	11730	6/6/19	16:04	SW3550C8270D
anthracene	< 0.016	0.016	ug/g	1	CL	6/3/19	11730	6/6/19	16:04	SW3550C8270D
fluoranthene	**0.070**	0.016	ug/g	1	CL	6/3/19	11730	6/6/19	16:04	SW3550C8270D
pyrene	**0.063**	0.016	ug/g	1	CL	6/3/19	11730	6/6/19	16:04	SW3550C8270D
benzo(a)anthracene	**0.022**	0.016	ug/g	1	CL	6/3/19	11730	6/6/19	16:04	SW3550C8270D
chrysene	**0.040**	0.016	ug/g	1	CL	6/3/19	11730	6/6/19	16:04	SW3550C8270D
benzo(b)fluoranthene	**0.078**	0.016	ug/g	1	CL	6/3/19	11730	6/6/19	16:04	SW3550C8270D
benzo(k)fluoranthene	**0.038**	0.016	ug/g	1	CL	6/3/19	11730	6/6/19	16:04	SW3550C8270D
benzo(a)pyrene	**0.037**	0.016	ug/g	1	CL	6/3/19	11730	6/6/19	16:04	SW3550C8270D
indeno(1,2,3-cd)pyrene	**0.036**	0.016	ug/g	1	CL	6/3/19	11730	6/6/19	16:04	SW3550C8270D
dibenzo(a,h)anthracene	< 0.016	0.016	ug/g	1	CL	6/3/19	11730	6/6/19	16:04	SW3550C8270D
benzo(g,h,i)perylene	**0.042**	0.016	ug/g	1	CL	6/3/19	11730	6/6/19	16:04	SW3550C8270D
Surrogate Recovery		**Limits**								
2-fluorobiphenyl SUR	**76**	43-116	%	1	CL	6/3/19	11730	6/6/19	16:04	SW3550C8270D
o-terphenyl SUR	**95**	33-141	%	1	CL	6/3/19	11730	6/6/19	16:04	SW3550C8270D

B = A low level of this analyte was also detected in the method blank.

Project ID: Becker Pond Dam Removal
Job ID: 48753

Sample#: 48753-006
Sample ID: U4
Matrix: Solid Percent Dry: 35.2% Results expressed on a dry weight basis.
Sampled: 5/20/19 19:00

Parameter	**Result**	**Reporting Limit**	**Units**	**Instr Dil'n Factor**	**Analyst**	**Prep Date**	**Batch**	**Analysis Date**	**Analysis Time**	**Reference**
naphthalene	< 0.011	0.011	ug/g	1	CL	6/3/19	11730	6/6/19	15:35	SW3550C8270D
2-methylnaphthalene	< 0.011	0.011	ug/g	1	CL	6/3/19	11730	6/6/19	15:35	SW3550C8270D
acenaphthylene	< 0.011	0.011	ug/g	1	CL	6/3/19	11730	6/6/19	15:35	SW3550C8270D
acenaphthene	< 0.011	0.011	ug/g	1	CL	6/3/19	11730	6/6/19	15:35	SW3550C8270D
dibenzofuran	< 0.011	0.011	ug/g	1	CL	6/3/19	11730	6/6/19	15:35	SW3550C8270D
fluorene	< 0.011	0.011	ug/g	1	CL	6/3/19	11730	6/6/19	15:35	SW3550C8270D
phenanthrene	**0.042** B	0.011	ug/g	1	CL	6/3/19	11730	6/6/19	15:35	SW3550C8270D
anthracene	< 0.011	0.011	ug/g	1	CL	6/3/19	11730	6/6/19	15:35	SW3550C8270D
fluoranthene	**0.052**	0.011	ug/g	1	CL	6/3/19	11730	6/6/19	15:35	SW3550C8270D
pyrene	**0.048**	0.011	ug/g	1	CL	6/3/19	11730	6/6/19	15:35	SW3550C8270D
benzo(a)anthracene	**0.019**	0.011	ug/g	1	CL	6/3/19	11730	6/6/19	15:35	SW3550C8270D
chrysene	**0.034**	0.011	ug/g	1	CL	6/3/19	11730	6/6/19	15:35	SW3550C8270D
benzo(b)fluoranthene	**0.057**	0.011	ug/g	1	CL	6/3/19	11730	6/6/19	15:35	SW3550C8270D
benzo(k)fluoranthene	**0.031**	0.011	ug/g	1	CL	6/3/19	11730	6/6/19	15:35	SW3550C8270D
benzo(a)pyrene	**0.028**	0.011	ug/g	1	CL	6/3/19	11730	6/6/19	15:35	SW3550C8270D
indeno(1,2,3-cd)pyrene	**0.032**	0.011	ug/g	1	CL	6/3/19	11730	6/6/19	15:35	SW3550C8270D
dibenzo(a,h)anthracene	< 0.011	0.011	ug/g	1	CL	6/3/19	11730	6/6/19	15:35	SW3550C8270D
benzo(g,h,i)perylene	**0.039**	0.011	ug/g	1	CL	6/3/19	11730	6/6/19	15:35	SW3550C8270D
Surrogate Recovery		**Limits**								
2-fluorobiphenyl SUR	**63**	43-116	%	1	CL	6/3/19	11730	6/6/19	15:35	SW3550C8270D
o-terphenyl SUR	**84**	33-141	%	1	CL	6/3/19	11730	6/6/19	15:35	SW3550C8270D

B = A low level of this analyte was also detected in the method blank.

Project ID: Becker Pond Dam Removal
Job ID: 48753

Sample#: 48753-001
Sample ID: D1
Matrix: Solid Percent Dry: 32.1% Results expressed on a dry weight basis.
Sampled: 5/20/19 12:15

Parameter	Result	Reporting Limit	Units	Instr Dil'n Factor	Analyst	Prep Date	Batch	Analysis Date	Analysis Time	Reference
alpha-BHC	< 0.12	0.12	ug/g	1	ACA	5/29/19	11724	5/30/19	17:52	SW3546/8081B
beta-BHC	< 0.12	0.12	ug/g	1	ACA	5/29/19	11724	5/30/19	17:52	SW3546/8081B
delta-BHC	< 0.12	0.12	ug/g	1	ACA	5/29/19	11724	5/30/19	17:52	SW3546/8081B
gamma-BHC (Lindane)	< 0.12	0.12	ug/g	1	ACA	5/29/19	11724	5/30/19	17:52	SW3546/8081B
Heptachlor	< 0.12	0.12	ug/g	1	ACA	5/29/19	11724	5/30/19	17:52	SW3546/8081B
Aldrin	< 0.12	0.12	ug/g	1	ACA	5/29/19	11724	5/30/19	17:52	SW3546/8081B
Heptachlor Epoxide	< 0.12	0.12	ug/g	1	ACA	5/29/19	11724	5/30/19	17:52	SW3546/8081B
Endosulfan I	< 0.12	0.12	ug/g	1	ACA	5/29/19	11724	5/30/19	17:52	SW3546/8081B
Dieldrin	< 0.12	0.12	ug/g	1	ACA	5/29/19	11724	5/30/19	17:52	SW3546/8081B
4,4'-DDE	< 0.12	0.12	ug/g	1	ACA	5/29/19	11724	5/30/19	17:52	SW3546/8081B
Endrin	< 0.12	0.12	ug/g	1	ACA	5/29/19	11724	5/30/19	17:52	SW3546/8081B
Endosulfan II	< 0.12	0.12	ug/g	1	ACA	5/29/19	11724	5/30/19	17:52	SW3546/8081B
4,4'-DDD	< 0.12	0.12	ug/g	1	ACA	5/29/19	11724	5/30/19	17:52	SW3546/8081B
Endosulfan Sulfate	< 0.12	0.12	ug/g	1	ACA	5/29/19	11724	5/30/19	17:52	SW3546/8081B
4,4'-DDT	< 0.12	0.12	ug/g	1	ACA	5/29/19	11724	5/30/19	17:52	SW3546/8081B
Methoxychlor	< 0.12	0.12	ug/g	1	ACA	5/29/19	11724	5/30/19	17:52	SW3546/8081B
Endrin Ketone	< 0.12	0.12	ug/g	1	ACA	5/29/19	11724	5/30/19	17:52	SW3546/8081B
Endrin Aldehyde	< 0.12	0.12	ug/g	1	ACA	5/29/19	11724	5/30/19	17:52	SW3546/8081B
alpha-Chlordane	< 0.12	0.12	ug/g	1	ACA	5/29/19	11724	5/30/19	17:52	SW3546/8081B
gamma-Chlordane	< 0.12	0.12	ug/g	1	ACA	5/29/19	11724	5/30/19	17:52	SW3546/8081B
Toxaphene	< 0.61	0.61	ug/g	1	ACA	5/29/19	11724	5/30/19	17:52	SW3546/8081B
Surrogate Recovery		**Limits**								
tetrachloro-m-xylene SUR	**49**	30-150	%	1	ACA	5/29/19	11724	5/30/19	17:52	SW3546/8081B
decachlorobiphenyl SUR	**48**	30-150	%	1	ACA	5/29/19	11724	5/30/19	17:52	SW3546/8081B

Project ID: Becker Pond Dam Removal
Job ID: 48753

Sample#: 48753-002
Sample ID: D2
Matrix: Solid Percent Dry: 75.2% Results expressed on a dry weight basis.
Sampled: 5/20/19 12:30

Parameter	Result	Reporting Limit	Units	Instr Dil'n Factor	Analyst	Prep Date	Batch	Analysis Date	Analysis Time	Reference
alpha-BHC	< 0.052	0.052	ug/g	1	ACA	5/29/19	11724	5/30/19	18:05	SW3546/8081B
beta-BHC	< 0.052	0.052	ug/g	1	ACA	5/29/19	11724	5/30/19	18:05	SW3546/8081B
delta-BHC	< 0.052	0.052	ug/g	1	ACA	5/29/19	11724	5/30/19	18:05	SW3546/8081B
gamma-BHC (Lindane)	< 0.052	0.052	ug/g	1	ACA	5/29/19	11724	5/30/19	18:05	SW3546/8081B
Heptachlor	< 0.052	0.052	ug/g	1	ACA	5/29/19	11724	5/30/19	18:05	SW3546/8081B
Aldrin	< 0.052	0.052	ug/g	1	ACA	5/29/19	11724	5/30/19	18:05	SW3546/8081B
Heptachlor Epoxide	< 0.052	0.052	ug/g	1	ACA	5/29/19	11724	5/30/19	18:05	SW3546/8081B
Endosulfan I	< 0.052	0.052	ug/g	1	ACA	5/29/19	11724	5/30/19	18:05	SW3546/8081B
Dieldrin	< 0.052	0.052	ug/g	1	ACA	5/29/19	11724	5/30/19	18:05	SW3546/8081B
4,4'-DDE	< 0.052	0.052	ug/g	1	ACA	5/29/19	11724	5/30/19	18:05	SW3546/8081B
Endrin	< 0.052	0.052	ug/g	1	ACA	5/29/19	11724	5/30/19	18:05	SW3546/8081B
Endosulfan II	< 0.052	0.052	ug/g	1	ACA	5/29/19	11724	5/30/19	18:05	SW3546/8081B
4,4'-DDD	< 0.052	0.052	ug/g	1	ACA	5/29/19	11724	5/30/19	18:05	SW3546/8081B
Endosulfan Sulfate	< 0.052	0.052	ug/g	1	ACA	5/29/19	11724	5/30/19	18:05	SW3546/8081B
4,4'-DDT	< 0.052	0.052	ug/g	1	ACA	5/29/19	11724	5/30/19	18:05	SW3546/8081B
Methoxychlor	< 0.052	0.052	ug/g	1	ACA	5/29/19	11724	5/30/19	18:05	SW3546/8081B
Endrin Ketone	< 0.052	0.052	ug/g	1	ACA	5/29/19	11724	5/30/19	18:05	SW3546/8081B
Endrin Aldehyde	< 0.052	0.052	ug/g	1	ACA	5/29/19	11724	5/30/19	18:05	SW3546/8081B
alpha-Chlordane	< 0.052	0.052	ug/g	1	ACA	5/29/19	11724	5/30/19	18:05	SW3546/8081B
gamma-Chlordane	< 0.052	0.052	ug/g	1	ACA	5/29/19	11724	5/30/19	18:05	SW3546/8081B
Toxaphene	< 0.26	0.26	ug/g	1	ACA	5/29/19	11724	5/30/19	18:05	SW3546/8081B
Surrogate Recovery		**Limits**								
tetrachloro-m-xylene SUR	**69**	30-150	%	1	ACA	5/29/19	11724	5/30/19	18:05	SW3546/8081B
decachlorobiphenyl SUR	**76**	30-150	%	1	ACA	5/29/19	11724	5/30/19	18:05	SW3546/8081B

Project ID: Becker Pond Dam Removal
Job ID: 48753

Sample#: 48753-003
Sample ID: U1
Matrix: Solid   Percent Dry: 55.5% Results expressed on a dry weight basis.
Sampled: 5/20/19 12:45

Parameter	**Result**	**Reporting Limit**	**Units**	**Instr Dil'n Factor**	**Analyst**	**Prep Date**	**Batch**	**Analysis Date**	**Analysis Time**	**Reference**
alpha-BHC	< 0.071	0.071	ug/g	1	ACA	5/29/19	11724	5/30/19	18:18	SW3546/8081B
beta-BHC	< 0.071	0.071	ug/g	1	ACA	5/29/19	11724	5/30/19	18:18	SW3546/8081B
delta-BHC	< 0.071	0.071	ug/g	1	ACA	5/29/19	11724	5/30/19	18:18	SW3546/8081B
gamma-BHC (Lindane)	< 0.071	0.071	ug/g	1	ACA	5/29/19	11724	5/30/19	18:18	SW3546/8081B
Heptachlor	< 0.071	0.071	ug/g	1	ACA	5/29/19	11724	5/30/19	18:18	SW3546/8081B
Aldrin	< 0.071	0.071	ug/g	1	ACA	5/29/19	11724	5/30/19	18:18	SW3546/8081B
Heptachlor Epoxide	< 0.071	0.071	ug/g	1	ACA	5/29/19	11724	5/30/19	18:18	SW3546/8081B
Endosulfan I	< 0.071	0.071	ug/g	1	ACA	5/29/19	11724	5/30/19	18:18	SW3546/8081B
Dieldrin	< 0.071	0.071	ug/g	1	ACA	5/29/19	11724	5/30/19	18:18	SW3546/8081B
4,4'-DDE	< 0.071	0.071	ug/g	1	ACA	5/29/19	11724	5/30/19	18:18	SW3546/8081B
Endrin	< 0.071	0.071	ug/g	1	ACA	5/29/19	11724	5/30/19	18:18	SW3546/8081B
Endosulfan II	< 0.071	0.071	ug/g	1	ACA	5/29/19	11724	5/30/19	18:18	SW3546/8081B
4,4'-DDD	< 0.071	0.071	ug/g	1	ACA	5/29/19	11724	5/30/19	18:18	SW3546/8081B
Endosulfan Sulfate	< 0.071	0.071	ug/g	1	ACA	5/29/19	11724	5/30/19	18:18	SW3546/8081B
4,4'-DDT	< 0.071	0.071	ug/g	1	ACA	5/29/19	11724	5/30/19	18:18	SW3546/8081B
Methoxychlor	< 0.071	0.071	ug/g	1	ACA	5/29/19	11724	5/30/19	18:18	SW3546/8081B
Endrin Ketone	< 0.071	0.071	ug/g	1	ACA	5/29/19	11724	5/30/19	18:18	SW3546/8081B
Endrin Aldehyde	< 0.071	0.071	ug/g	1	ACA	5/29/19	11724	5/30/19	18:18	SW3546/8081B
alpha-Chlordane	< 0.071	0.071	ug/g	1	ACA	5/29/19	11724	5/30/19	18:18	SW3546/8081B
gamma-Chlordane	< 0.071	0.071	ug/g	1	ACA	5/29/19	11724	5/30/19	18:18	SW3546/8081B
Toxaphene	< 0.35	0.35	ug/g	1	ACA	5/29/19	11724	5/30/19	18:18	SW3546/8081B
Surrogate Recovery		**Limits**								
tetrachloro-m-xylene SUR	**61**	30-150	%	1	ACA	5/29/19	11724	5/30/19	18:18	SW3546/8081B
decachlorobiphenyl SUR	**67**	30-150	%	1	ACA	5/29/19	11724	5/30/19	18:18	SW3546/8081B

Project ID: Becker Pond Dam Removal
Job ID: 48753

Sample#: 48753-004
Sample ID: U2
Matrix: Solid Percent Dry: 21.8% Results expressed on a dry weight basis.
Sampled: 5/20/19 18:00

Parameter	Result	Reporting Limit	Units	Instr Dil'n Factor	Analyst	Prep Date	Batch	Analysis Date	Analysis Time	Reference
alpha-BHC	< 0.18	0.18	ug/g	1	ACA	5/29/19	11724	5/30/19	18:30	SW3546/8081B
beta-BHC	< 0.18	0.18	ug/g	1	ACA	5/29/19	11724	5/30/19	18:30	SW3546/8081B
delta-BHC	< 0.18	0.18	ug/g	1	ACA	5/29/19	11724	5/30/19	18:30	SW3546/8081B
gamma-BHC (Lindane)	< 0.18	0.18	ug/g	1	ACA	5/29/19	11724	5/30/19	18:30	SW3546/8081B
Heptachlor	< 0.18	0.18	ug/g	1	ACA	5/29/19	11724	5/30/19	18:30	SW3546/8081B
Aldrin	< 0.18	0.18	ug/g	1	ACA	5/29/19	11724	5/30/19	18:30	SW3546/8081B
Heptachlor Epoxide	< 0.18	0.18	ug/g	1	ACA	5/29/19	11724	5/30/19	18:30	SW3546/8081B
Endosulfan I	< 0.18	0.18	ug/g	1	ACA	5/29/19	11724	5/30/19	18:30	SW3546/8081B
Dieldrin	< 0.18	0.18	ug/g	1	ACA	5/29/19	11724	5/30/19	18:30	SW3546/8081B
4,4'-DDE	< 0.18	0.18	ug/g	1	ACA	5/29/19	11724	5/30/19	18:30	SW3546/8081B
Endrin	< 0.18	0.18	ug/g	1	ACA	5/29/19	11724	5/30/19	18:30	SW3546/8081B
Endosulfan II	< 0.18	0.18	ug/g	1	ACA	5/29/19	11724	5/30/19	18:30	SW3546/8081B
4,4'-DDD	< 0.18	0.18	ug/g	1	ACA	5/29/19	11724	5/30/19	18:30	SW3546/8081B
Endosulfan Sulfate	< 0.18	0.18	ug/g	1	ACA	5/29/19	11724	5/30/19	18:30	SW3546/8081B
4,4'-DDT	< 0.18	0.18	ug/g	1	ACA	5/29/19	11724	5/30/19	18:30	SW3546/8081B
Methoxychlor	< 0.18	0.18	ug/g	1	ACA	5/29/19	11724	5/30/19	18:30	SW3546/8081B
Endrin Ketone	< 0.18	0.18	ug/g	1	ACA	5/29/19	11724	5/30/19	18:30	SW3546/8081B
Endrin Aldehyde	< 0.18	0.18	ug/g	1	ACA	5/29/19	11724	5/30/19	18:30	SW3546/8081B
alpha-Chlordane	< 0.18	0.18	ug/g	1	ACA	5/29/19	11724	5/30/19	18:30	SW3546/8081B
gamma-Chlordane	< 0.18	0.18	ug/g	1	ACA	5/29/19	11724	5/30/19	18:30	SW3546/8081B
Toxaphene	< 0.89	0.89	ug/g	1	ACA	5/29/19	11724	5/30/19	18:30	SW3546/8081B
Surrogate Recovery		**Limits**								
tetrachloro-m-xylene SUR	**39**	30-150	%	1	ACA	5/29/19	11724	5/30/19	18:30	SW3546/8081B
decachlorobiphenyl SUR	**33**	30-150	%	1	ACA	5/29/19	11724	5/30/19	18:30	SW3546/8081B

Project ID: Becker Pond Dam Removal
Job ID: 48753

Sample#: 48753-005
Sample ID: U3
Matrix: Solid Percent Dry: 25.5% Results expressed on a dry weight basis.
Sampled: 5/20/19 18:30

Parameter	Result	Reporting Limit	Units	Instr Dil'n Factor	Analyst	Prep Date	Batch	Analysis Date	Analysis Time	Reference
alpha-BHC	< 0.15	0.15	ug/g	1	ACA	5/29/19	11724	5/30/19	18:43	SW3546/8081B
beta-BHC	< 0.15	0.15	ug/g	1	ACA	5/29/19	11724	5/30/19	18:43	SW3546/8081B
delta-BHC	< 0.15	0.15	ug/g	1	ACA	5/29/19	11724	5/30/19	18:43	SW3546/8081B
gamma-BHC (Lindane)	< 0.15	0.15	ug/g	1	ACA	5/29/19	11724	5/30/19	18:43	SW3546/8081B
Heptachlor	< 0.15	0.15	ug/g	1	ACA	5/29/19	11724	5/30/19	18:43	SW3546/8081B
Aldrin	< 0.15	0.15	ug/g	1	ACA	5/29/19	11724	5/30/19	18:43	SW3546/8081B
Heptachlor Epoxide	< 0.15	0.15	ug/g	1	ACA	5/29/19	11724	5/30/19	18:43	SW3546/8081B
Endosulfan I	< 0.15	0.15	ug/g	1	ACA	5/29/19	11724	5/30/19	18:43	SW3546/8081B
Dieldrin	< 0.15	0.15	ug/g	1	ACA	5/29/19	11724	5/30/19	18:43	SW3546/8081B
4,4'-DDE	< 0.15	0.15	ug/g	1	ACA	5/29/19	11724	5/30/19	18:43	SW3546/8081B
Endrin	< 0.15	0.15	ug/g	1	ACA	5/29/19	11724	5/30/19	18:43	SW3546/8081B
Endosulfan II	< 0.15	0.15	ug/g	1	ACA	5/29/19	11724	5/30/19	18:43	SW3546/8081B
4,4'-DDD	< 0.15	0.15	ug/g	1	ACA	5/29/19	11724	5/30/19	18:43	SW3546/8081B
Endosulfan Sulfate	< 0.15	0.15	ug/g	1	ACA	5/29/19	11724	5/30/19	18:43	SW3546/8081B
4,4'-DDT	< 0.15	0.15	ug/g	1	ACA	5/29/19	11724	5/30/19	18:43	SW3546/8081B
Methoxychlor	< 0.15	0.15	ug/g	1	ACA	5/29/19	11724	5/30/19	18:43	SW3546/8081B
Endrin Ketone	< 0.15	0.15	ug/g	1	ACA	5/29/19	11724	5/30/19	18:43	SW3546/8081B
Endrin Aldehyde	< 0.15	0.15	ug/g	1	ACA	5/29/19	11724	5/30/19	18:43	SW3546/8081B
alpha-Chlordane	< 0.15	0.15	ug/g	1	ACA	5/29/19	11724	5/30/19	18:43	SW3546/8081B
gamma-Chlordane	< 0.15	0.15	ug/g	1	ACA	5/29/19	11724	5/30/19	18:43	SW3546/8081B
Toxaphene	< 0.77	0.77	ug/g	1	ACA	5/29/19	11724	5/30/19	18:43	SW3546/8081B
Surrogate Recovery		**Limits**								
tetrachloro-m-xylene SUR	**36**	30-150	%	1	ACA	5/29/19	11724	5/30/19	18:43	SW3546/8081B
decachlorobiphenyl SUR	**36**	30-150	%	1	ACA	5/29/19	11724	5/30/19	18:43	SW3546/8081B

Project ID: Becker Pond Dam Removal
Job ID: 48753

Sample#: 48753-006
Sample ID: U4
Matrix: Solid Percent Dry: 35.2% Results expressed on a dry weight basis.
Sampled: 5/20/19 19:00

Parameter	Result	Reporting Limit	Units	Instr Dil'n Factor	Analyst	Prep Date	Batch	Analysis Date	Analysis Time	Reference
alpha-BHC	< 0.11	0.11	ug/g	1	ACA	5/29/19	11724	5/30/19	19:46	SW3546/8081B
beta-BHC	< 0.11	0.11	ug/g	1	ACA	5/29/19	11724	5/30/19	19:46	SW3546/8081B
delta-BHC	< 0.11	0.11	ug/g	1	ACA	5/29/19	11724	5/30/19	19:46	SW3546/8081B
gamma-BHC (Lindane)	< 0.11	0.11	ug/g	1	ACA	5/29/19	11724	5/30/19	19:46	SW3546/8081B
Heptachlor	< 0.11	0.11	ug/g	1	ACA	5/29/19	11724	5/30/19	19:46	SW3546/8081B
Aldrin	< 0.11	0.11	ug/g	1	ACA	5/29/19	11724	5/30/19	19:46	SW3546/8081B
Heptachlor Epoxide	< 0.11	0.11	ug/g	1	ACA	5/29/19	11724	5/30/19	19:46	SW3546/8081B
Endosulfan I	< 0.11	0.11	ug/g	1	ACA	5/29/19	11724	5/30/19	19:46	SW3546/8081B
Dieldrin	< 0.11	0.11	ug/g	1	ACA	5/29/19	11724	5/30/19	19:46	SW3546/8081B
4,4'-DDE	< 0.11	0.11	ug/g	1	ACA	5/29/19	11724	5/30/19	19:46	SW3546/8081B
Endrin	< 0.11	0.11	ug/g	1	ACA	5/29/19	11724	5/30/19	19:46	SW3546/8081B
Endosulfan II	< 0.11	0.11	ug/g	1	ACA	5/29/19	11724	5/30/19	19:46	SW3546/8081B
4,4'-DDD	< 0.11	0.11	ug/g	1	ACA	5/29/19	11724	5/30/19	19:46	SW3546/8081B
Endosulfan Sulfate	< 0.11	0.11	ug/g	1	ACA	5/29/19	11724	5/30/19	19:46	SW3546/8081B
4,4'-DDT	< 0.11	0.11	ug/g	1	ACA	5/29/19	11724	5/30/19	19:46	SW3546/8081B
Methoxychlor	< 0.11	0.11	ug/g	1	ACA	5/29/19	11724	5/30/19	19:46	SW3546/8081B
Endrin Ketone	< 0.11	0.11	ug/g	1	ACA	5/29/19	11724	5/30/19	19:46	SW3546/8081B
Endrin Aldehyde	< 0.11	0.11	ug/g	1	ACA	5/29/19	11724	5/30/19	19:46	SW3546/8081B
alpha-Chlordane	< 0.11	0.11	ug/g	1	ACA	5/29/19	11724	5/30/19	19:46	SW3546/8081B
gamma-Chlordane	< 0.11	0.11	ug/g	1	ACA	5/29/19	11724	5/30/19	19:46	SW3546/8081B
Toxaphene	< 0.55	0.55	ug/g	1	ACA	5/29/19	11724	5/30/19	19:46	SW3546/8081B
Surrogate Recovery		**Limits**								
tetrachloro-m-xylene SUR	**48**	30-150	%	1	ACA	5/29/19	11724	5/30/19	19:46	SW3546/8081B
decachlorobiphenyl SUR	**49**	30-150	%	1	ACA	5/29/19	11724	5/30/19	19:46	SW3546/8081B

Project ID: Becker Pond Dam Removal
Job ID: 48753

Sample#: 48753-001
Sample ID: D1
Matrix: Solid Percent Dry: 32.1% Results expressed on a dry weight basis.
Sampled: 5/20/19 12:15

Parameter	**Result**	**Reporting Limit**	**Units**	**Instr Dil'n Factor**	**Analyst**	**Prep Date**	**Batch**	**Analysis**		**Reference**
								Date	**Time**	
PCB-1016	< 0.5	0.5	ug/g	1	ACA	5/23/19	11710	5/24/19	13:14	SW3546/8082A
PCB-1221	< 0.5	0.5	ug/g	1	ACA	5/23/19	11710	5/24/19	13:14	SW3546/8082A
PCB-1232	< 0.5	0.5	ug/g	1	ACA	5/23/19	11710	5/24/19	13:14	SW3546/8082A
PCB-1242	< 0.5	0.5	ug/g	1	ACA	5/23/19	11710	5/24/19	13:14	SW3546/8082A
PCB-1248	< 0.5	0.5	ug/g	1	ACA	5/23/19	11710	5/24/19	13:14	SW3546/8082A
PCB-1254	< 0.5	0.5	ug/g	1	ACA	5/23/19	11710	5/24/19	13:14	SW3546/8082A
PCB-1260	< 0.5	0.5	ug/g	1	ACA	5/23/19	11710	5/24/19	13:14	SW3546/8082A
PCB-1262	< 0.5	0.5	ug/g	1	ACA	5/23/19	11710	5/24/19	13:14	SW3546/8082A
PCB-1268	< 0.5	0.5	ug/g	1	ACA	5/23/19	11710	5/24/19	13:14	SW3546/8082A
Surrogate Recovery		**Limits**								
tetrachloro-m-xylene SUR	**53**	30-150	%	1	ACA	5/23/19	11710	5/24/19	13:14	SW3546/8082A
decachlorobiphenyl SUR	**31**	30-150	%	1	ACA	5/23/19	11710	5/24/19	13:14	SW3546/8082A

Sample#: 48753-002
Sample ID: D2
Matrix: Solid Percent Dry: 75.2% Results expressed on a dry weight basis.
Sampled: 5/20/19 12:30

Parameter	**Result**	**Reporting Limit**	**Units**	**Instr Dil'n Factor**	**Analyst**	**Prep Date**	**Batch**	**Analysis**		**Reference**
								Date	**Time**	
PCB-1016	< 0.2	0.2	ug/g	1	ACA	5/23/19	11710	5/24/19	14:34	SW3546/8082A
PCB-1221	< 0.2	0.2	ug/g	1	ACA	5/23/19	11710	5/24/19	14:34	SW3546/8082A
PCB-1232	< 0.2	0.2	ug/g	1	ACA	5/23/19	11710	5/24/19	14:34	SW3546/8082A
PCB-1242	< 0.2	0.2	ug/g	1	ACA	5/23/19	11710	5/24/19	14:34	SW3546/8082A
PCB-1248	< 0.2	0.2	ug/g	1	ACA	5/23/19	11710	5/24/19	14:34	SW3546/8082A
PCB-1254	< 0.2	0.2	ug/g	1	ACA	5/23/19	11710	5/24/19	14:34	SW3546/8082A
PCB-1260	< 0.2	0.2	ug/g	1	ACA	5/23/19	11710	5/24/19	14:34	SW3546/8082A
PCB-1262	< 0.2	0.2	ug/g	1	ACA	5/23/19	11710	5/24/19	14:34	SW3546/8082A
PCB-1268	< 0.2	0.2	ug/g	1	ACA	5/23/19	11710	5/24/19	14:34	SW3546/8082A
Surrogate Recovery		**Limits**								
tetrachloro-m-xylene SUR	**105**	30-150	%	1	ACA	5/23/19	11710	5/24/19	14:34	SW3546/8082A
decachlorobiphenyl SUR	**89**	30-150	%	1	ACA	5/23/19	11710	5/24/19	14:34	SW3546/8082A

Project ID: Becker Pond Dam Removal
Job ID: 48753

Sample#: 48753-003
Sample ID: U1
Matrix: Solid Percent Dry: 55.5% Results expressed on a dry weight basis.
Sampled: 5/20/19 12:45

Parameter	Result	Reporting Limit	Units	Instr Dil'n Factor	Analyst	Prep Date	Batch	Analysis Date	Time	Reference
PCB-1016	< 0.3	0.3	ug/g	1	ACA	5/23/19	11710	5/24/19	14:49	SW3546/8082A
PCB-1221	< 0.3	0.3	ug/g	1	ACA	5/23/19	11710	5/24/19	14:49	SW3546/8082A
PCB-1232	< 0.3	0.3	ug/g	1	ACA	5/23/19	11710	5/24/19	14:49	SW3546/8082A
PCB-1242	< 0.3	0.3	ug/g	1	ACA	5/23/19	11710	5/24/19	14:49	SW3546/8082A
PCB-1248	< 0.3	0.3	ug/g	1	ACA	5/23/19	11710	5/24/19	14:49	SW3546/8082A
PCB-1254	< 0.3	0.3	ug/g	1	ACA	5/23/19	11710	5/24/19	14:49	SW3546/8082A
PCB-1260	< 0.3	0.3	ug/g	1	ACA	5/23/19	11710	5/24/19	14:49	SW3546/8082A
PCB-1262	< 0.3	0.3	ug/g	1	ACA	5/23/19	11710	5/24/19	14:49	SW3546/8082A
PCB-1268	< 0.3	0.3	ug/g	1	ACA	5/23/19	11710	5/24/19	14:49	SW3546/8082A
Surrogate Recovery		**Limits**								
tetrachloro-m-xylene SUR	**107**	30-150	%	1	ACA	5/23/19	11710	5/24/19	14:49	SW3546/8082A
decachlorobiphenyl SUR	**95**	30-150	%	1	ACA	5/23/19	11710	5/24/19	14:49	SW3546/8082A

Sample#: 48753-004
Sample ID: U2
Matrix: Solid Percent Dry: 21.8% Results expressed on a dry weight basis.
Sampled: 5/20/19 18:00

Parameter	Result	Reporting Limit	Units	Instr Dil'n Factor	Analyst	Prep Date	Batch	Analysis Date	Time	Reference
PCB-1016	< 0.7	0.7	ug/g	1	ACA	5/23/19	11710	5/24/19	15:05	SW3546/8082A
PCB-1221	< 0.7	0.7	ug/g	1	ACA	5/23/19	11710	5/24/19	15:05	SW3546/8082A
PCB-1232	< 0.7	0.7	ug/g	1	ACA	5/23/19	11710	5/24/19	15:05	SW3546/8082A
PCB-1242	< 0.7	0.7	ug/g	1	ACA	5/23/19	11710	5/24/19	15:05	SW3546/8082A
PCB-1248	< 0.7	0.7	ug/g	1	ACA	5/23/19	11710	5/24/19	15:05	SW3546/8082A
PCB-1254	< 0.7	0.7	ug/g	1	ACA	5/23/19	11710	5/24/19	15:05	SW3546/8082A
PCB-1260	< 0.7	0.7	ug/g	1	ACA	5/23/19	11710	5/24/19	15:05	SW3546/8082A
PCB-1262	< 0.7	0.7	ug/g	1	ACA	5/23/19	11710	5/24/19	15:05	SW3546/8082A
PCB-1268	< 0.7	0.7	ug/g	1	ACA	5/23/19	11710	5/24/19	15:05	SW3546/8082A
Surrogate Recovery		**Limits**								
tetrachloro-m-xylene SUR	**50**	30-150	%	1	ACA	5/23/19	11710	5/24/19	15:05	SW3546/8082A
decachlorobiphenyl SUR	**24** *	30-150	%	1	ACA	5/23/19	11710	5/24/19	15:05	SW3546/8082A

***** The surrogate showed recovery outside the acceptance limits. Reanalysis of the sample showed similar results. Matrix interference suspected.***

Sample#: 48753-005
Sample ID: U3
Matrix: Solid Percent Dry: 25.5% Results expressed on a dry weight basis.
Sampled: 5/20/19 18:30

Parameter	Result	Reporting Limit	Units	Instr Dil'n Factor	Analyst	Prep Date	Batch	Analysis Date	Time	Reference
PCB-1016	< 0.6	0.6	ug/g	1	ACA	5/23/19	11710	5/24/19	15:20	SW3546/8082A
PCB-1221	< 0.6	0.6	ug/g	1	ACA	5/23/19	11710	5/24/19	15:20	SW3546/8082A
PCB-1232	< 0.6	0.6	ug/g	1	ACA	5/23/19	11710	5/24/19	15:20	SW3546/8082A
PCB-1242	< 0.6	0.6	ug/g	1	ACA	5/23/19	11710	5/24/19	15:20	SW3546/8082A
PCB-1248	< 0.6	0.6	ug/g	1	ACA	5/23/19	11710	5/24/19	15:20	SW3546/8082A
PCB-1254	< 0.6	0.6	ug/g	1	ACA	5/23/19	11710	5/24/19	15:20	SW3546/8082A
PCB-1260	< 0.6	0.6	ug/g	1	ACA	5/23/19	11710	5/24/19	15:20	SW3546/8082A
PCB-1262	< 0.6	0.6	ug/g	1	ACA	5/23/19	11710	5/24/19	15:20	SW3546/8082A
PCB-1268	< 0.6	0.6	ug/g	1	ACA	5/23/19	11710	5/24/19	15:20	SW3546/8082A
Surrogate Recovery		**Limits**								
tetrachloro-m-xylene SUR	**53**	30-150	%	1	ACA	5/23/19	11710	5/24/19	15:20	SW3546/8082A
decachlorobiphenyl SUR	**37**	30-150	%	1	ACA	5/23/19	11710	5/24/19	15:20	SW3546/8082A

Sample#: 48753-006
Sample ID: U4
Matrix: Solid Percent Dry: 35.2% Results expressed on a dry weight basis.
Sampled: 5/20/19 19:00

Parameter	Result	Reporting Limit	Units	Instr Dil'n Factor	Analyst	Prep Date	Batch	Analysis Date	Time	Reference
PCB-1016	< 0.5	0.5	ug/g	1	ACA	5/23/19	11710	5/24/19	15:35	SW3546/8082A
PCB-1221	< 0.5	0.5	ug/g	1	ACA	5/23/19	11710	5/24/19	15:35	SW3546/8082A
PCB-1232	< 0.5	0.5	ug/g	1	ACA	5/23/19	11710	5/24/19	15:35	SW3546/8082A
PCB-1242	< 0.5	0.5	ug/g	1	ACA	5/23/19	11710	5/24/19	15:35	SW3546/8082A
PCB-1248	< 0.5	0.5	ug/g	1	ACA	5/23/19	11710	5/24/19	15:35	SW3546/8082A
PCB-1254	< 0.5	0.5	ug/g	1	ACA	5/23/19	11710	5/24/19	15:35	SW3546/8082A
PCB-1260	< 0.5	0.5	ug/g	1	ACA	5/23/19	11710	5/24/19	15:35	SW3546/8082A
PCB-1262	< 0.5	0.5	ug/g	1	ACA	5/23/19	11710	5/24/19	15:35	SW3546/8082A
PCB-1268	< 0.5	0.5	ug/g	1	ACA	5/23/19	11710	5/24/19	15:35	SW3546/8082A
Surrogate Recovery		**Limits**								
tetrachloro-m-xylene SUR	**58**	30-150	%	1	ACA	5/23/19	11710	5/24/19	15:35	SW3546/8082A
decachlorobiphenyl SUR	**43**	30-150	%	1	ACA	5/23/19	11710	5/24/19	15:35	SW3546/8082A

Project ID: Becker Pond Dam Removal
Job ID: 48753

Sample#: 48753-001
Sample ID: D1
Matrix: Solid Percent Dry: 32.1% Results expressed on a dry weight basis.
Sampled: 5/20/19 12:15

Parameter	Result	Reporting Limit	Units	Instr Dil'n Factor	Analyst	Prep Date	Batch	Analysis Date	Analysis Time	Reference
naphthalene	< 0.6	0.6	ug/g	1	CL	5/28/19	11718	5/29/19	19:34	MA EPH
2-methylnaphthalene	< 0.6	0.6	ug/g	1	CL	5/28/19	11718	5/29/19	19:34	MA EPH
phenanthrene	< 0.6	0.6	ug/g	1	CL	5/28/19	11718	5/29/19	19:34	MA EPH
acenaphthene	< 0.6	0.6	ug/g	1	CL	5/28/19	11718	5/29/19	19:34	MA EPH
acenaphthylene	< 0.6	0.6	ug/g	1	CL	5/28/19	11718	5/29/19	19:34	MA EPH
fluorene	< 0.6	0.6	ug/g	1	CL	5/28/19	11718	5/29/19	19:34	MA EPH
anthracene	< 0.6	0.6	ug/g	1	CL	5/28/19	11718	5/29/19	19:34	MA EPH
fluoranthene	< 0.6	0.6	ug/g	1	CL	5/28/19	11718	5/29/19	19:34	MA EPH
pyrene	< 0.6	0.6	ug/g	1	CL	5/28/19	11718	5/29/19	19:34	MA EPH
benzo(a)anthracene	< 0.6	0.6	ug/g	1	CL	5/28/19	11718	5/29/19	19:34	MA EPH
chrysene	< 0.6	0.6	ug/g	1	CL	5/28/19	11718	5/29/19	19:34	MA EPH
benzo(b)fluoranthene	< 0.6	0.6	ug/g	1	CL	5/28/19	11718	5/29/19	19:34	MA EPH
benzo(k)fluoranthene	< 0.6	0.6	ug/g	1	CL	5/28/19	11718	5/29/19	19:34	MA EPH
benzo(a)pyrene	< 0.6	0.6	ug/g	1	CL	5/28/19	11718	5/29/19	19:34	MA EPH
indeno(1,2,3-cd)pyrene	< 0.6	0.6	ug/g	1	CL	5/28/19	11718	5/29/19	19:34	MA EPH
dibenzo(a,h)anthracene	< 0.6	0.6	ug/g	1	CL	5/28/19	11718	5/29/19	19:34	MA EPH
benzo(g,h,i)perylene	< 0.6	0.6	ug/g	1	CL	5/28/19	11718	5/29/19	19:34	MA EPH
Unadjusted C11-C22 Aromatics	**69**	62	ug/g	1	ACA	5/28/19	11718	5/30/19	5:51	MA EPH
C9-C18 Aliphatics	< 62	62	ug/g	1	ACA	5/28/19	11718	5/30/19	5:51	MA EPH
C19-C36 Aliphatics	< 62	62	ug/g	1	ACA	5/28/19	11718	5/30/19	5:51	MA EPH
C11-C22 Aromatics	**69**	62	ug/g	1	ACA	5/28/19	11718	5/30/19	5:51	MA EPH
Surrogate Recovery		**Limits**								
1-chloro-octadecane SUR	**48**	40-140	%	1	ACA	5/28/19	11718	5/30/19	5:51	MA EPH
o-terphenyl SUR	**54**	40-140	%	1	ACA	5/28/19	11718	5/30/19	5:51	MA EPH
2-fluorobiphenyl SUR	**84**	40-140	%	1	ACA	5/28/19	11718	5/30/19	5:51	MA EPH
2-bromonaphthalene SUR	**80**	40-140	%	1	ACA	5/28/19	11718	5/30/19	5:51	MA EPH

Project ID: Becker Pond Dam Removal
Job ID: 48753

Sample#: 48753-002
Sample ID: D2
Matrix: Solid Percent Dry: 75.2% Results expressed on a dry weight basis.
Sampled: 5/20/19 12:30

Parameter	**Result**	**Reporting Limit**	**Units**	**Instr Dil'n Factor**	**Analyst**	**Prep Date**	**Batch**	**Analysis Date**	**Analysis Time**	**Reference**
naphthalene	< 0.2	0.2	ug/g	1	CL	5/28/19	11718	5/29/19	20:04	MA EPH
2-methylnaphthalene	< 0.2	0.2	ug/g	1	CL	5/28/19	11718	5/29/19	20:04	MA EPH
phenanthrene	< 0.2	0.2	ug/g	1	CL	5/28/19	11718	5/29/19	20:04	MA EPH
acenaphthene	< 0.2	0.2	ug/g	1	CL	5/28/19	11718	5/29/19	20:04	MA EPH
acenaphthylene	< 0.2	0.2	ug/g	1	CL	5/28/19	11718	5/29/19	20:04	MA EPH
fluorene	< 0.2	0.2	ug/g	1	CL	5/28/19	11718	5/29/19	20:04	MA EPH
anthracene	< 0.2	0.2	ug/g	1	CL	5/28/19	11718	5/29/19	20:04	MA EPH
fluoranthene	< 0.2	0.2	ug/g	1	CL	5/28/19	11718	5/29/19	20:04	MA EPH
pyrene	< 0.2	0.2	ug/g	1	CL	5/28/19	11718	5/29/19	20:04	MA EPH
benzo(a)anthracene	< 0.2	0.2	ug/g	1	CL	5/28/19	11718	5/29/19	20:04	MA EPH
chrysene	< 0.2	0.2	ug/g	1	CL	5/28/19	11718	5/29/19	20:04	MA EPH
benzo(b)fluoranthene	< 0.2	0.2	ug/g	1	CL	5/28/19	11718	5/29/19	20:04	MA EPH
benzo(k)fluoranthene	< 0.2	0.2	ug/g	1	CL	5/28/19	11718	5/29/19	20:04	MA EPH
benzo(a)pyrene	< 0.2	0.2	ug/g	1	CL	5/28/19	11718	5/29/19	20:04	MA EPH
indeno(1,2,3-cd)pyrene	< 0.2	0.2	ug/g	1	CL	5/28/19	11718	5/29/19	20:04	MA EPH
dibenzo(a,h)anthracene	< 0.2	0.2	ug/g	1	CL	5/28/19	11718	5/29/19	20:04	MA EPH
benzo(g,h,i)perylene	< 0.2	0.2	ug/g	1	CL	5/28/19	11718	5/29/19	20:04	MA EPH
Unadjusted C11-C22 Aromatics	< 25	25	ug/g	1	ACA	5/28/19	11718	5/30/19	6:23	MA EPH
C9-C18 Aliphatics	< 25	25	ug/g	1	ACA	5/28/19	11718	5/30/19	6:23	MA EPH
C19-C36 Aliphatics	< 25	25	ug/g	1	ACA	5/28/19	11718	5/30/19	6:23	MA EPH
C11-C22 Aromatics	< 25	25	ug/g	1	ACA	5/28/19	11718	5/30/19	6:23	MA EPH
Surrogate Recovery		**Limits**								
1-chloro-octadecane SUR	**50**	40-140	%	1	ACA	5/28/19	11718	5/30/19	6:23	MA EPH
o-terphenyl SUR	**50**	40-140	%	1	ACA	5/28/19	11718	5/30/19	6:23	MA EPH
2-fluorobiphenyl SUR	**82**	40-140	%	1	ACA	5/28/19	11718	5/30/19	6:23	MA EPH
2-bromonaphthalene SUR	**81**	40-140	%	1	ACA	5/28/19	11718	5/30/19	6:23	MA EPH

Project ID: Becker Pond Dam Removal
Job ID: 48753

Sample#: 48753-003
Sample ID: U1
Matrix: Solid Percent Dry: 55.5% Results expressed on a dry weight basis.
Sampled: 5/20/19 12:45

Parameter	**Result**	**Reporting Limit**	**Units**	**Instr Dil'n Factor**	**Analyst**	**Prep Date**	**Batch**	**Analysis Date**	**Analysis Time**	**Reference**
naphthalene	< 0.4	0.4	ug/g	1	CL	5/28/19	11718	5/29/19	23:01	MA EPH
2-methylnaphthalene	< 0.4	0.4	ug/g	1	CL	5/28/19	11718	5/29/19	23:01	MA EPH
phenanthrene	< 0.4	0.4	ug/g	1	CL	5/28/19	11718	5/29/19	23:01	MA EPH
acenaphthene	< 0.4	0.4	ug/g	1	CL	5/28/19	11718	5/29/19	23:01	MA EPH
acenaphthylene	< 0.4	0.4	ug/g	1	CL	5/28/19	11718	5/29/19	23:01	MA EPH
fluorene	< 0.4	0.4	ug/g	1	CL	5/28/19	11718	5/29/19	23:01	MA EPH
anthracene	< 0.4	0.4	ug/g	1	CL	5/28/19	11718	5/29/19	23:01	MA EPH
fluoranthene	< 0.4	0.4	ug/g	1	CL	5/28/19	11718	5/29/19	23:01	MA EPH
pyrene	< 0.4	0.4	ug/g	1	CL	5/28/19	11718	5/29/19	23:01	MA EPH
benzo(a)anthracene	< 0.4	0.4	ug/g	1	CL	5/28/19	11718	5/29/19	23:01	MA EPH
chrysene	< 0.4	0.4	ug/g	1	CL	5/28/19	11718	5/29/19	23:01	MA EPH
benzo(b)fluoranthene	< 0.4	0.4	ug/g	1	CL	5/28/19	11718	5/29/19	23:01	MA EPH
benzo(k)fluoranthene	< 0.4	0.4	ug/g	1	CL	5/28/19	11718	5/29/19	23:01	MA EPH
benzo(a)pyrene	< 0.4	0.4	ug/g	1	CL	5/28/19	11718	5/29/19	23:01	MA EPH
indeno(1,2,3-cd)pyrene	< 0.4	0.4	ug/g	1	CL	5/28/19	11718	5/29/19	23:01	MA EPH
dibenzo(a,h)anthracene	< 0.4	0.4	ug/g	1	CL	5/28/19	11718	5/29/19	23:01	MA EPH
benzo(g,h,i)perylene	< 0.4	0.4	ug/g	1	CL	5/28/19	11718	5/29/19	23:01	MA EPH
Unadjusted C11-C22 Aromatics	**46**	36	ug/g	1	ACA	5/28/19	11718	5/30/19	6:55	MA EPH
C9-C18 Aliphatics	< 36	36	ug/g	1	ACA	5/28/19	11718	5/30/19	6:55	MA EPH
C19-C36 Aliphatics	< 36	36	ug/g	1	ACA	5/28/19	11718	5/30/19	6:55	MA EPH
C11-C22 Aromatics	**46**	36	ug/g	1	ACA	5/28/19	11718	5/30/19	6:55	MA EPH
Surrogate Recovery		**Limits**								
1-chloro-octadecane SUR	**55**	40-140	%	1	ACA	5/28/19	11718	5/30/19	6:55	MA EPH
o-terphenyl SUR	**71**	40-140	%	1	ACA	5/28/19	11718	5/30/19	6:55	MA EPH
2-fluorobiphenyl SUR	**101**	40-140	%	1	ACA	5/28/19	11718	5/30/19	6:55	MA EPH
2-bromonaphthalene SUR	**99**	40-140	%	1	ACA	5/28/19	11718	5/30/19	6:55	MA EPH

Project ID: Becker Pond Dam Removal
Job ID: 48753

Sample#: 48753-004
Sample ID: U2
Matrix: Solid Percent Dry: 21.8% Results expressed on a dry weight basis.
Sampled: 5/20/19 18:00

Parameter	Result	Reporting Limit	Units	Instr Dil'n Factor	Analyst	Prep Date	Batch	Analysis Date	Analysis Time	Reference
naphthalene	< 0.9	0.9	ug/g	1	CL	5/28/19	11718	5/29/19	23:31	MA EPH
2-methylnaphthalene	< 0.9	0.9	ug/g	1	CL	5/28/19	11718	5/29/19	23:31	MA EPH
phenanthrene	< 0.9	0.9	ug/g	1	CL	5/28/19	11718	5/29/19	23:31	MA EPH
acenaphthene	< 0.9	0.9	ug/g	1	CL	5/28/19	11718	5/29/19	23:31	MA EPH
acenaphthylene	< 0.9	0.9	ug/g	1	CL	5/28/19	11718	5/29/19	23:31	MA EPH
fluorene	< 0.9	0.9	ug/g	1	CL	5/28/19	11718	5/29/19	23:31	MA EPH
anthracene	< 0.9	0.9	ug/g	1	CL	5/28/19	11718	5/29/19	23:31	MA EPH
fluoranthene	< 0.9	0.9	ug/g	1	CL	5/28/19	11718	5/29/19	23:31	MA EPH
pyrene	< 0.9	0.9	ug/g	1	CL	5/28/19	11718	5/29/19	23:31	MA EPH
benzo(a)anthracene	< 0.9	0.9	ug/g	1	CL	5/28/19	11718	5/29/19	23:31	MA EPH
chrysene	< 0.9	0.9	ug/g	1	CL	5/28/19	11718	5/29/19	23:31	MA EPH
benzo(b)fluoranthene	< 0.9	0.9	ug/g	1	CL	5/28/19	11718	5/29/19	23:31	MA EPH
benzo(k)fluoranthene	< 0.9	0.9	ug/g	1	CL	5/28/19	11718	5/29/19	23:31	MA EPH
benzo(a)pyrene	< 0.9	0.9	ug/g	1	CL	5/28/19	11718	5/29/19	23:31	MA EPH
indeno(1,2,3-cd)pyrene	< 0.9	0.9	ug/g	1	CL	5/28/19	11718	5/29/19	23:31	MA EPH
dibenzo(a,h)anthracene	< 0.9	0.9	ug/g	1	CL	5/28/19	11718	5/29/19	23:31	MA EPH
benzo(g,h,i)perylene	< 0.9	0.9	ug/g	1	CL	5/28/19	11718	5/29/19	23:31	MA EPH
Unadjusted C11-C22 Aromatics	**210**	89	ug/g	1	ACA	5/28/19	11718	5/30/19	7:26	MA EPH
C9-C18 Aliphatics	< 89	89	ug/g	1	ACA	5/28/19	11718	5/30/19	7:26	MA EPH
C19-C36 Aliphatics	< 89	89	ug/g	1	ACA	5/28/19	11718	5/30/19	7:26	MA EPH
C11-C22 Aromatics	**210**	89	ug/g	1	ACA	5/28/19	11718	5/30/19	7:26	MA EPH
Surrogate Recovery		**Limits**								
1-chloro-octadecane SUR	**49**	40-140	%	1	ACA	5/28/19	11718	5/30/19	7:26	MA EPH
o-terphenyl SUR	**58**	40-140	%	1	ACA	5/28/19	11718	5/30/19	7:26	MA EPH
2-fluorobiphenyl SUR	**90**	40-140	%	1	ACA	5/28/19	11718	5/30/19	7:26	MA EPH
2-bromonaphthalene SUR	**88**	40-140	%	1	ACA	5/28/19	11718	5/30/19	7:26	MA EPH

Project ID: Becker Pond Dam Removal
Job ID: 48753

Sample#: 48753-005
Sample ID: U3
Matrix: Solid Percent Dry: 25.5% Results expressed on a dry weight basis.
Sampled: 5/20/19 18:30

Parameter	Result	Reporting Limit	Units	Instr Dil'n Factor	Analyst	Prep Date	Batch	Analysis Date	Time	Reference
naphthalene	< 0.8	0.8	ug/g	1	CL	5/28/19	11718	5/30/19	0:00	MA EPH
2-methylnaphthalene	< 0.8	0.8	ug/g	1	CL	5/28/19	11718	5/30/19	0:00	MA EPH
phenanthrene	< 0.8	0.8	ug/g	1	CL	5/28/19	11718	5/30/19	0:00	MA EPH
acenaphthene	< 0.8	0.8	ug/g	1	CL	5/28/19	11718	5/30/19	0:00	MA EPH
acenaphthylene	< 0.8	0.8	ug/g	1	CL	5/28/19	11718	5/30/19	0:00	MA EPH
fluorene	< 0.8	0.8	ug/g	1	CL	5/28/19	11718	5/30/19	0:00	MA EPH
anthracene	< 0.8	0.8	ug/g	1	CL	5/28/19	11718	5/30/19	0:00	MA EPH
fluoranthene	< 0.8	0.8	ug/g	1	CL	5/28/19	11718	5/30/19	0:00	MA EPH
pyrene	< 0.8	0.8	ug/g	1	CL	5/28/19	11718	5/30/19	0:00	MA EPH
benzo(a)anthracene	< 0.8	0.8	ug/g	1	CL	5/28/19	11718	5/30/19	0:00	MA EPH
chrysene	< 0.8	0.8	ug/g	1	CL	5/28/19	11718	5/30/19	0:00	MA EPH
benzo(b)fluoranthene	< 0.8	0.8	ug/g	1	CL	5/28/19	11718	5/30/19	0:00	MA EPH
benzo(k)fluoranthene	< 0.8	0.8	ug/g	1	CL	5/28/19	11718	5/30/19	0:00	MA EPH
benzo(a)pyrene	< 0.8	0.8	ug/g	1	CL	5/28/19	11718	5/30/19	0:00	MA EPH
indeno(1,2,3-cd)pyrene	< 0.8	0.8	ug/g	1	CL	5/28/19	11718	5/30/19	0:00	MA EPH
dibenzo(a,h)anthracene	< 0.8	0.8	ug/g	1	CL	5/28/19	11718	5/30/19	0:00	MA EPH
benzo(g,h,i)perylene	< 0.8	0.8	ug/g	1	CL	5/28/19	11718	5/30/19	0:00	MA EPH
Unadjusted C11-C22 Aromatics	**110**	76	ug/g	1	ACA	5/28/19	11718	5/30/19	7:58	MA EPH
C9-C18 Aliphatics	< 76	76	ug/g	1	ACA	5/28/19	11718	5/30/19	7:58	MA EPH
C19-C36 Aliphatics	< 76	76	ug/g	1	ACA	5/28/19	11718	5/30/19	7:58	MA EPH
C11-C22 Aromatics	**110**	76	ug/g	1	ACA	5/28/19	11718	5/30/19	7:58	MA EPH
Surrogate Recovery		**Limits**								
1-chloro-octadecane SUR	**48**	40-140	%	1	ACA	5/28/19	11718	5/30/19	7:58	MA EPH
o-terphenyl SUR	**51**	40-140	%	1	ACA	5/28/19	11718	5/30/19	7:58	MA EPH
2-fluorobiphenyl SUR	**87**	40-140	%	1	ACA	5/28/19	11718	5/30/19	7:58	MA EPH
2-bromonaphthalene SUR	**85**	40-140	%	1	ACA	5/28/19	11718	5/30/19	7:58	MA EPH

Project ID: Becker Pond Dam Removal
Job ID: 48753

Sample#: 48753-006
Sample ID: U4
Matrix: Solid Percent Dry: 35.2% Results expressed on a dry weight basis.
Sampled: 5/20/19 19:00

Parameter	Result	Reporting Limit	Units	Instr Dil'n Factor	Analyst	Prep Date	Batch	Analysis Date	Analysis Time	Reference
naphthalene	< 0.5	0.5	ug/g	1	CL	5/28/19	11718	5/30/19	0:30	MA EPH
2-methylnaphthalene	< 0.5	0.5	ug/g	1	CL	5/28/19	11718	5/30/19	0:30	MA EPH
phenanthrene	< 0.5	0.5	ug/g	1	CL	5/28/19	11718	5/30/19	0:30	MA EPH
acenaphthene	< 0.5	0.5	ug/g	1	CL	5/28/19	11718	5/30/19	0:30	MA EPH
acenaphthylene	< 0.5	0.5	ug/g	1	CL	5/28/19	11718	5/30/19	0:30	MA EPH
fluorene	< 0.5	0.5	ug/g	1	CL	5/28/19	11718	5/30/19	0:30	MA EPH
anthracene	< 0.5	0.5	ug/g	1	CL	5/28/19	11718	5/30/19	0:30	MA EPH
fluoranthene	< 0.5	0.5	ug/g	1	CL	5/28/19	11718	5/30/19	0:30	MA EPH
pyrene	< 0.5	0.5	ug/g	1	CL	5/28/19	11718	5/30/19	0:30	MA EPH
benzo(a)anthracene	< 0.5	0.5	ug/g	1	CL	5/28/19	11718	5/30/19	0:30	MA EPH
chrysene	< 0.5	0.5	ug/g	1	CL	5/28/19	11718	5/30/19	0:30	MA EPH
benzo(b)fluoranthene	< 0.5	0.5	ug/g	1	CL	5/28/19	11718	5/30/19	0:30	MA EPH
benzo(k)fluoranthene	< 0.5	0.5	ug/g	1	CL	5/28/19	11718	5/30/19	0:30	MA EPH
benzo(a)pyrene	< 0.5	0.5	ug/g	1	CL	5/28/19	11718	5/30/19	0:30	MA EPH
indeno(1,2,3-cd)pyrene	< 0.5	0.5	ug/g	1	CL	5/28/19	11718	5/30/19	0:30	MA EPH
dibenzo(a,h)anthracene	< 0.5	0.5	ug/g	1	CL	5/28/19	11718	5/30/19	0:30	MA EPH
benzo(g,h,i)perylene	< 0.5	0.5	ug/g	1	CL	5/28/19	11718	5/30/19	0:30	MA EPH
Unadjusted C11-C22 Aromatics	**64**	54	ug/g	1	ACA	5/28/19	11718	5/30/19	8:30	MA EPH
C9-C18 Aliphatics	< 54	54	ug/g	1	ACA	5/28/19	11718	5/30/19	8:30	MA EPH
C19-C36 Aliphatics	< 54	54	ug/g	1	ACA	5/28/19	11718	5/30/19	8:30	MA EPH
C11-C22 Aromatics	**64**	54	ug/g	1	ACA	5/28/19	11718	5/30/19	8:30	MA EPH
Surrogate Recovery		**Limits**								
1-chloro-octadecane SUR	**41**	40-140	%	1	ACA	5/28/19	11718	5/30/19	8:30	MA EPH
o-terphenyl SUR	**45**	40-140	%	1	ACA	5/28/19	11718	5/30/19	8:30	MA EPH
2-fluorobiphenyl SUR	**87**	40-140	%	1	ACA	5/28/19	11718	5/30/19	8:30	MA EPH
2-bromonaphthalene SUR	**86**	40-140	%	1	ACA	5/28/19	11718	5/30/19	8:30	MA EPH

Project ID: Becker Pond Dam Removal
Job ID: 48753

Sample#: 48753-001
Sample ID: D1
Matrix: Solid Percent Dry: 32.1% Results expressed on a dry weight basis.
Sampled: 5/20/19 12:15

Parameter	Result	Reporting Limit	Units	Instr Dil'n Factor	Analyst	Prep Date	Batch	Analysis		Reference
								Date	Time	
Arsenic	**4.4**	1.3	ug/g	5	AGN	5/24/19	11707	5/24/19	19:56	SW3051A6020A
Cadmium	**0.97**	0.10	ug/g	1	AGN	5/30/19	11720	5/30/19	21:22	SW3051A6020A
Chromium	**9.0**	1.3	ug/g	5	AGN	5/24/19	11707	5/24/19	19:56	SW3051A6020A
Copper	**10**	1.3	ug/g	5	AGN	5/24/19	11707	5/24/19	19:56	SW3051A6020A
Lead	**21**	6.7	ug/g	5	AGN	5/24/19	11707	5/24/19	19:56	SW3051A6020A
Mercury	< 0.14	0.14	ug/g	1	AGN	5/29/19	11716	5/29/19	16:28	SW7471B
Nickel	**19**	13	ug/g	5	AGN	5/24/19	11707	5/24/19	19:56	SW3051A6020A
Zinc	**95**	13	ug/g	5	AGN	5/24/19	11707	5/24/19	19:56	SW3051A6020A

Sample#: 48753-002
Sample ID: D2
Matrix: Solid Percent Dry: 75.2% Results expressed on a dry weight basis.
Sampled: 5/20/19 12:30

Parameter	Result	Reporting Limit	Units	Instr Dil'n Factor	Analyst	Prep Date	Batch	Analysis		Reference
								Date	Time	
Arsenic	**2.7**	0.55	ug/g	1	AGN	5/24/19	11707	5/24/19	20:03	SW3051A6020A
Cadmium	**0.32**	0.06	ug/g	1	AGN	5/30/19	11720	5/30/19	21:29	SW3051A6020A
Chromium	**5.2**	0.6	ug/g	5	AGN	5/24/19	11707	5/24/19	20:03	SW3051A6020A
Copper	**5.0**	0.6	ug/g	5	AGN	5/24/19	11707	5/24/19	20:03	SW3051A6020A
Lead	**7.7**	2.8	ug/g	5	AGN	5/24/19	11707	5/24/19	20:03	SW3051A6020A
Mercury	< 0.13	0.13	ug/g	1	AGN	5/29/19	11716	5/29/19	16:30	SW7471B
Nickel	**12**	5.5	ug/g	5	AGN	5/24/19	11707	5/24/19	20:03	SW3051A6020A
Zinc	**40** B	5.5	ug/g	5	AGN	5/24/19	11707	5/24/19	20:03	SW3051A6020A

B = A low level of this analyte was also detected in the method blank.

Sample#: 48753-003
Sample ID: U1
Matrix: Solid Percent Dry: 55.5% Results expressed on a dry weight basis.
Sampled: 5/20/19 12:45

Parameter	Result	Reporting Limit	Units	Instr Dil'n Factor	Analyst	Prep Date	Batch	Analysis		Reference
								Date	Time	
Arsenic	**2.1**	0.80	ug/g	1	AGN	5/24/19	11707	5/24/19	20:10	SW3051A6020A
Cadmium	**0.22**	0.08	ug/g	1	AGN	5/30/19	11720	5/30/19	21:36	SW3051A6020A
Chromium	**9.0**	8.0	ug/g	5	AGN	5/24/19	11707	5/24/19	20:10	SW3051A6020A
Copper	**4.5**	0.8	ug/g	5	AGN	5/24/19	11707	5/24/19	20:10	SW3051A6020A
Lead	**10**	4.0	ug/g	5	AGN	5/24/19	11707	5/24/19	20:10	SW3051A6020A
Mercury	< 0.13	0.13	ug/g	1	AGN	5/29/19	11716	5/29/19	16:32	SW7471B
Nickel	**14**	8.0	ug/g	5	AGN	5/24/19	11707	5/24/19	20:10	SW3051A6020A
Zinc	**64** B	8.0	ug/g	5	AGN	5/24/19	11707	5/24/19	20:10	SW3051A6020A

B = A low level of this analyte was also detected in the method blank.

Project ID: Becker Pond Dam Removal
Job ID: 48753

Sample#: 48753-004
Sample ID: U2
Matrix: Solid Percent Dry: 21.8% Results expressed on a dry weight basis.
Sampled: 5/20/19 18:00

Parameter	Result	Reporting Limit	Units	Instr Dil'n Factor	Analyst	Prep Date	Batch	Analysis Date	Time	Reference
Arsenic	**5.4**	2.2	ug/g	5	AGN	5/24/19	11707	5/24/19	20:37	SW3051A6020A
Cadmium	**1.1**	0.11	ug/g	1	AGN	5/30/19	11720	5/30/19	21:43	SW3051A6020A
Chromium	**17**	2.2	ug/g	5	AGN	5/24/19	11707	5/24/19	20:37	SW3051A6020A
Copper	**15**	2.2	ug/g	5	AGN	5/24/19	11707	5/24/19	20:37	SW3051A6020A
Lead	**43**	11	ug/g	5	AGN	5/24/19	11707	5/24/19	20:37	SW3051A6020A
Mercury	< 0.16	0.16	ug/g	1	AGN	5/29/19	11716	5/29/19	16:34	SW7471B
Nickel	**31**	22	ug/g	5	AGN	5/24/19	11707	5/24/19	20:37	SW3051A6020A
Zinc	**150**	22	ug/g	5	AGN	5/24/19	11707	5/24/19	20:37	SW3051A6020A

Sample#: 48753-005
Sample ID: U3
Matrix: Solid Percent Dry: 25.5% Results expressed on a dry weight basis.
Sampled: 5/20/19 18:30

Parameter	Result	Reporting Limit	Units	Instr Dil'n Factor	Analyst	Prep Date	Batch	Analysis Date	Time	Reference
Arsenic	**5.0**	1.5	ug/g	5	AGN	5/24/19	11707	5/24/19	20:44	SW3051A6020A
Cadmium	**1.2**	0.11	ug/g	1	AGN	5/30/19	11720	5/30/19	21:49	SW3051A6020A
Chromium	**18**	15	ug/g	5	AGN	5/24/19	11707	5/24/19	20:44	SW3051A6020A
Copper	**15**	15	ug/g	5	AGN	5/24/19	11707	5/24/19	20:44	SW3051A6020A
Lead	**42**	7.4	ug/g	5	AGN	5/24/19	11707	5/24/19	20:44	SW3051A6020A
Mercury	**0.20**	0.14	ug/g	1	AGN	5/29/19	11716	5/29/19	16:36	SW7471B
Nickel	**22**	15	ug/g	5	AGN	5/24/19	11707	5/24/19	20:44	SW3051A6020A
Zinc	**120**	15	ug/g	5	AGN	5/24/19	11707	5/24/19	20:44	SW3051A6020A

Sample#: 48753-006
Sample ID: U4
Matrix: Solid Percent Dry: 35.2% Results expressed on a dry weight basis.
Sampled: 5/20/19 19:00

Parameter	Result	Reporting Limit	Units	Instr Dil'n Factor	Analyst	Prep Date	Batch	Analysis Date	Time	Reference
Arsenic	**3.0**	1.3	ug/g	5	AGN	5/24/19	11707	5/24/19	20:51	SW3051A6020A
Cadmium	**0.47**	0.09	ug/g	1	AGN	5/30/19	11720	5/30/19	21:56	SW3051A6020A
Chromium	**8.3**	1.3	ug/g	5	AGN	5/24/19	11707	5/24/19	20:51	SW3051A6020A
Copper	**11**	1.3	ug/g	5	AGN	5/24/19	11707	5/24/19	20:51	SW3051A6020A
Lead	**25**	6.7	ug/g	5	AGN	5/24/19	11707	5/24/19	20:51	SW3051A6020A
Mercury	< 0.13	0.13	ug/g	1	AGN	5/29/19	11716	5/29/19	16:41	SW7471B
Nickel	**12**	1.3	ug/g	5	AGN	5/24/19	11707	5/24/19	20:51	SW3051A6020A
Zinc	**66** B	13	ug/g	5	AGN	5/24/19	11707	5/24/19	20:51	SW3051A6020A

B = A low level of this analyte was also detected in the method blank.

Project ID: Becker Pond Dam Removal
Job ID: 48753

Sample#: 48753-001
Sample ID: D1
Matrix: Solid
Sampled: 5/20/19 12:15

Parameter	**Result**	**Reporting Limit**	**Units**	**Instr Dil'n Factor**	**Analyst**	**Prep Date**	**Batch**	**Analysis Date**	**Time**	**Reference**
Percent Solids	**32.1**	1.0	%	1			1901484			SM2540B,G

Sample#: 48753-002
Sample ID: D2
Matrix: Solid
Sampled: 5/20/19 12:30

Parameter	**Result**	**Reporting Limit**	**Units**	**Instr Dil'n Factor**	**Analyst**	**Prep Date**	**Batch**	**Analysis Date**	**Time**	**Reference**
Percent Solids	**75.2**	1.0	%	1			1901484			SM2540B,G

Sample#: 48753-003
Sample ID: U1
Matrix: Solid
Sampled: 5/20/19 12:45

Parameter	**Result**	**Reporting Limit**	**Units**	**Instr Dil'n Factor**	**Analyst**	**Prep Date**	**Batch**	**Analysis Date**	**Time**	**Reference**
Percent Solids	**55.5**	1.0	%	1			1901484			SM2540B,G

Sample#: 48753-004
Sample ID: U2
Matrix: Solid
Sampled: 5/20/19 18:00

Parameter	**Result**	**Reporting Limit**	**Units**	**Instr Dil'n Factor**	**Analyst**	**Prep Date**	**Batch**	**Analysis Date**	**Time**	**Reference**
Percent Solids	**21.8**	1.0	%	1			1901484			SM2540B,G

Sample#: 48753-005
Sample ID: U3
Matrix: Solid
Sampled: 5/20/19 18:30

Parameter	**Result**	**Reporting Limit**	**Units**	**Instr Dil'n Factor**	**Analyst**	**Prep Date**	**Batch**	**Analysis Date**	**Time**	**Reference**
Percent Solids	**25.5**	1.0	%	1			1901484			SM2540B,G

Sample#: 48753-006
Sample ID: U4
Matrix: Solid
Sampled: 5/20/19 19:00

Parameter	**Result**	**Reporting Limit**	**Units**	**Instr Dil'n Factor**	**Analyst**	**Prep Date**	**Batch**	**Analysis Date**	**Time**	**Reference**
Percent Solids	**35.2**	1.0	%	1			1901484			SM2540B,G

Quality Control Report

Absolute Resource associates

124 Heritage Avenue Unit 16
Portsmouth, NH 03801
www.absoluteresourceassociates.com

Case Narrative
Lab # 48753

Sample Receiving and Chain of Custody Discrepancies

Samples were received in acceptable condition, at 3 degrees C, on ice, and in accordance with sample handling, preservation and integrity guidelines.
The TOC analysis was subcontracted to Eurofins TestAmerica, Pittsburgh, of Pittsburgh, PA.

Calibration

No exceptions noted.

Method Blank

PAH: The compound, phenanthrene, was detected in the BLK11730 at 0.0056 ug/g. The associated results have been qualified accordingly.
Metals: The element, Zinc, was detected in the BLK11707 at 7.4ug/g. There is no impact to the data for samples 48753-001, -004, and -005 as the concentrations detected in these field samples were greater than ten times the blank contamination. The results for samples 48753-002, -003, and -006 have been qualified accordingly.

Surrogate Recoveries

PCB: The surrogate, decachlorobiphenyl, for sample 48753-004, showed recovery outside the acceptance limits. Reanalysis of the sample showed similar results. Matrix interference suspected.

Laboratory Control Sample Results

EPH: The relative percent difference between the LCS and LCSD11718 was outside the acceptance criteria for 2-methylnaphthalene. The percent recovery for this analyte in each QC parameter was within the acceptance criteria. No impact to the data suspected.

Matrix Spike/Matrix Spike Duplicate/Duplicate Results

Not requested for this project.

Other

Reporting Limits: Dilutions performed during the analysis are noted on the result pages.

No other exceptions noted.

GLOSSARY

%R	Percent Recovery
BLK	Blank (Method Blank, Preparation Blank)
CCB	Continuing Calibration Blank
CCV	Continuing Calibration Verification
Dil’n	Dilution
DL	Detection Limit
DUP	Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection
LOQ	Limit of Quantitation
MB	Methanol Blank (associated with solid VOC samples)
MLCS	Methanol Laboratory Control Sample (associated with solid VOC samples)
MLCSD	Methanol Laboratory Control Sample Duplicate (associated with solid VOC samples)
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PB	Preparation Blank
QC	Quality Control
RL	Reporting Limit
RPD	Relative Percent Difference
SUR	Surrogate

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- QC Report -

Method	QC ID	Parameter	Associated Sample		Result	Units	Amt Added	%R	Limits		RPD	RPD Limit
MA EPH	BLK11718	naphthalene		<	0.2	ug/g						
		2-methylnaphthalene		<	0.2	ug/g						
		phenanthrene		<	0.2	ug/g						
		acenaphthene		<	0.2	ug/g						
		acenaphthylene		<	0.2	ug/g						
		fluorene		<	0.2	ug/g						
		anthracene		<	0.2	ug/g						
		fluoranthene		<	0.2	ug/g						
		pyrene		<	0.2	ug/g						
		benzo(a)anthracene		<	0.2	ug/g						
		chrysene		<	0.2	ug/g						
		benzo(b)fluoranthene		<	0.2	ug/g						
		benzo(k)fluoranthene		<	0.2	ug/g						
		benzo(a)pyrene		<	0.2	ug/g						
		indeno(1,2,3-cd)pyrene		<	0.2	ug/g						
		dibenzo(a,h)anthracene		<	0.2	ug/g						
		benzo(g,h,i)perylene		<	0.2	ug/g						
		Unadjusted C11-C22 Aromatics		<	20	ug/g						
		C9-C18 Aliphatics		<	20	ug/g						
		C19-C36 Aliphatics		<	20	ug/g						
		C11-C22 Aromatics		<	20	ug/g						
		1-chloro-octadecane SUR			52	%			40	140		
		o-terphenyl SUR			57	%			40	140		
		2-fluorobiphenyl SUR			83	%			40	140		
		2-bromonaphthalene SUR			82	%			40	140		

Method	QC ID	Parameter	Associated Sample	Result	Units	Amt Added	%R	Limits		RPD	RPD Limit
MA EPH	LCS11718	naphthalene		4.1	ug/g	6	69	40	140		
		2-methylnaphthalene		4.7	ug/g	6	78	40	140		
		phenanthrene		5.0	ug/g	6	83	40	140		
		acenaphthene		4.4	ug/g	6	73	40	140		
		acenaphthylene		4.3	ug/g	6	71	40	140		
		fluorene		4.5	ug/g	6	74	40	140		
		anthracene		4.8	ug/g	6	80	40	140		
		fluoranthene		5.0	ug/g	6	83	40	140		
		pyrene		5.0	ug/g	6	84	40	140		
		benzo(a)anthracene		5.0	ug/g	6	84	40	140		
		chrysene		4.9	ug/g	6	81	40	140		
		benzo(b)fluoranthene		5.3	ug/g	6	88	40	140		
		benzo(k)fluoranthene		5.3	ug/g	6	88	40	140		
		benzo(a)pyrene		5.2	ug/g	6	87	40	140		
		indeno(1,2,3-cd)pyrene		4.6	ug/g	6	77	40	140		
		dibenzo(a,h)anthracene		4.8	ug/g	6	80	40	140		
		benzo(g,h,i)perylene		4.5	ug/g	6	76	40	140		
		Unadjusted C11-C22 Aromatics		82	ug/g	102	81	40	140		
		C9-C18 Aliphatics		26	ug/g	36	72	40	140		
		C19-C36 Aliphatics		45	ug/g	48	95	40	140		
		C11-C22 Aromatics		< 20	ug/g			40	140		
		1-chloro-octadecane SUR		64	%			40	140		
		o-terphenyl SUR		69	%			40	140		
		2-fluorobiphenyl SUR		86	%			40	140		
		2-bromonaphthalene SUR		84	%			40	140		
MA EPH	LCSD11718	naphthalene		3.3	ug/g	6	55	40	140	23	25
		2-methylnaphthalene		3.6	ug/g	6	60	40	140	26 *	25
		phenanthrene		4.1	ug/g	6	69	40	140	19	25
		acenaphthene		3.4	ug/g	6	57	40	140	24	25
		acenaphthylene		3.4	ug/g	6	57	40	140	23	25
		fluorene		3.6	ug/g	6	60	40	140	22	25
		anthracene		4.1	ug/g	6	68	40	140	16	25
		fluoranthene		4.0	ug/g	6	67	40	140	22	25
		pyrene		4.5	ug/g	6	75	40	140	11	25
		benzo(a)anthracene		4.4	ug/g	6	74	40	140	13	25
		chrysene		4.3	ug/g	6	72	40	140	12	25
		benzo(b)fluoranthene		4.8	ug/g	6	79	40	140	10	25
		benzo(k)fluoranthene		4.7	ug/g	6	78	40	140	11	25
		benzo(a)pyrene		4.6	ug/g	6	76	40	140	14	25
		indeno(1,2,3-cd)pyrene		4.2	ug/g	6	69	40	140	11	25
		dibenzo(a,h)anthracene		4.3	ug/g	6	72	40	140	10	25
		benzo(g,h,i)perylene		4.1	ug/g	6	69	40	140	10	25
		Unadjusted C11-C22 Aromatics		77	ug/g	102	75	40	140	7	25
		C9-C18 Aliphatics		26	ug/g	36	71	40	140	1	25
		C19-C36 Aliphatics		45	ug/g	48	94	40	140	1	25
		C11-C22 Aromatics		< 20	ug/g			40	140		25
		1-chloro-octadecane SUR		63	%			40	140		
		o-terphenyl SUR		72	%			40	140		
		2-fluorobiphenyl SUR		86	%			40	140		
		2-bromonaphthalene SUR		85	%			40	140		

Method	QC ID	Parameter	Associated Sample		Result	Units	Amt Added	%R	Limits		RPD	RPD Limit
SW3546/8081B	BLK11724	alpha-BHC		<	0.040	ug/g						
		beta-BHC		<	0.040	ug/g						
		delta-BHC		<	0.040	ug/g						
		gamma-BHC (Lindane)		<	0.040	ug/g						
		Heptachlor		<	0.040	ug/g						
		Aldrin		<	0.040	ug/g						
		Heptachlor Epoxide		<	0.040	ug/g						
		Endosulfan I		<	0.040	ug/g						
		Dieldrin		<	0.040	ug/g						
		4,4'-DDE		<	0.040	ug/g						
		Endrin		<	0.040	ug/g						
		Endosulfan II		<	0.040	ug/g						
		4,4'-DDD		<	0.040	ug/g						
		Endosulfan Sulfate		<	0.040	ug/g						
		4,4'-DDT		<	0.040	ug/g						
		Methoxychlor		<	0.040	ug/g						
		Endrin Ketone		<	0.040	ug/g						
		Endrin Aldehyde		<	0.040	ug/g						
		alpha-Chlordane		<	0.040	ug/g						
		gamma-Chlordane		<	0.040	ug/g						
		Toxaphene		<	0.20	ug/g						
		tetrachloro-m-xylene SUR			69	%			30	150		
		decachlorobiphenyl SUR			69	%			30	150		
SW3546/8081B	DUP11724	alpha-BHC	48782-005	<	0.046	ug/g						30
		beta-BHC	48782-005	<	0.046	ug/g						30
		delta-BHC	48782-005	<	0.046	ug/g						30
		gamma-BHC (Lindane)	48782-005	<	0.046	ug/g						30
		Heptachlor	48782-005	<	0.046	ug/g						30
		Aldrin	48782-005	<	0.046	ug/g						30
		Heptachlor Epoxide	48782-005	<	0.046	ug/g						30
		Endosulfan I	48782-005	<	0.046	ug/g						30
		Dieldrin	48782-005	<	0.046	ug/g						30
		4,4'-DDE	48782-005	<	0.046	ug/g						30
		Endrin	48782-005	<	0.046	ug/g						30
		Endosulfan II	48782-005	<	0.046	ug/g						30
		4,4'-DDD	48782-005	<	0.046	ug/g						30
		Endosulfan Sulfate	48782-005	<	0.046	ug/g						30
		4,4'-DDT	48782-005	<	0.046	ug/g						30
		Methoxychlor	48782-005	<	0.046	ug/g						30
		Endrin Ketone	48782-005	<	0.046	ug/g						30
		Endrin Aldehyde	48782-005	<	0.046	ug/g						30
		alpha-Chlordane	48782-005	<	0.046	ug/g						30
		gamma-Chlordane	48782-005	<	0.046	ug/g						30
		Toxaphene	48782-005	<	0.23	ug/g						30
		tetrachloro-m-xylene SUR	48782-005		34	%			30	150		
		decachlorobiphenyl SUR	48782-005		42	%			30	150		

Method	QC ID	Parameter	Associated Sample	Result	Units	Amt Added	%R	Limits		RPD	RPD Limit
SW3546/8081B	LCS11724	alpha-BHC		0.24	ug/g	0.4	60	40	140		
		beta-BHC		0.24	ug/g	0.4	59	40	140		
		delta-BHC		0.25	ug/g	0.4	62	40	140		
		gamma-BHC (Lindane)		0.25	ug/g	0.4	61	40	140		
		Heptachlor		0.24	ug/g	0.4	61	40	140		
		Aldrin		0.24	ug/g	0.4	59	40	140		
		Heptachlor Epoxide		0.26	ug/g	0.4	64	40	140		
		Endosulfan I		0.24	ug/g	0.4	59	40	140		
		Dieldrin		0.25	ug/g	0.4	63	40	140		
		4,4'-DDE		0.25	ug/g	0.4	63	40	140		
		Endrin		0.20	ug/g	0.4	51	40	140		
		Endosulfan II		0.27	ug/g	0.4	68	40	140		
		4,4'-DDD		0.25	ug/g	0.4	64	40	140		
		Endosulfan Sulfate		0.24	ug/g	0.4	61	40	140		
		4,4'-DDT		0.26	ug/g	0.4	65	40	140		
		Methoxychlor		0.26	ug/g	0.4	66	40	140		
		Endrin Ketone		0.31	ug/g	0.4	77	40	140		
		Endrin Aldehyde		0.24	ug/g	0.4	60	40	140		
		alpha-Chlordane		0.25	ug/g	0.4	63	40	140		
		gamma-Chlordane		0.25	ug/g	0.4	62	40	140		
		Toxaphene		< 0.20	ug/g						
		tetrachloro-m-xylene SUR		67	%			30	150		
		decachlorobiphenyl SUR		71	%			30	150		
SW3546/8081B	MS11724	alpha-BHC	48782-005	0.16	ug/g	0.48	34	30	150		
		beta-BHC	48782-005	0.16	ug/g	0.48	33	30	150		
		delta-BHC	48782-005	0.18	ug/g	0.48	37	30	150		
		gamma-BHC (Lindane)	48782-005	0.17	ug/g	0.48	35	30	150		
		Heptachlor	48782-005	0.19	ug/g	0.48	39	30	150		
		Aldrin	48782-005	0.18	ug/g	0.48	37	30	150		
		Heptachlor Epoxide	48782-005	0.22	ug/g	0.48	47	30	150		
		Endosulfan I	48782-005	0.17	ug/g	0.48	35	30	150		
		Dieldrin	48782-005	0.22	ug/g	0.48	45	30	150		
		4,4'-DDE	48782-005	0.19	ug/g	0.48	40	30	150		
		Endrin	48782-005	0.15	ug/g	0.48	31	30	150		
		Endosulfan II	48782-005	0.22	ug/g	0.48	45	30	150		
		4,4'-DDD	48782-005	0.21	ug/g	0.48	43	30	150		
		Endosulfan Sulfate	48782-005	0.18	ug/g	0.48	39	30	150		
		4,4'-DDT	48782-005	0.23	ug/g	0.48	49	30	150		
		Methoxychlor	48782-005	0.19	ug/g	0.48	40	30	150		
		Endrin Ketone	48782-005	0.23	ug/g	0.48	49	30	150		
		Endrin Aldehyde	48782-005	0.17	ug/g	0.48	35	30	150		
		alpha-Chlordane	48782-005	0.17	ug/g	0.48	36	30	150		
		gamma-Chlordane	48782-005	0.18	ug/g	0.48	37	30	150		
		Toxaphene	48782-005	< 0.24	ug/g						
		tetrachloro-m-xylene SUR	48782-005	45	%			30	150		
		decachlorobiphenyl SUR	48782-005	44	%			30	150		

Method	QC ID	Parameter	Associated Sample		Result	Units	Amt Added	%R	Limits		RPD	RPD Limit
SW3546/8082A	BLK11710	PCB-1016		<	0.2	ug/g						
		PCB-1221		<	0.2	ug/g						
		PCB-1232		<	0.2	ug/g						
		PCB-1242		<	0.2	ug/g						
		PCB-1248		<	0.2	ug/g						
		PCB-1254		<	0.2	ug/g						
		PCB-1260		<	0.2	ug/g						
		PCB-1262		<	0.2	ug/g						
		PCB-1268		<	0.2	ug/g						
		tetrachloro-m-xylene SUR			94	%			30	150		
		decachlorobiphenyl SUR			87	%			30	150		
SW3546/8082A	LCS11710	PCB-1016			2.7	ug/g	3.33	82	40	140		
		PCB-1221		<	0.2	ug/g						
		PCB-1232		<	0.2	ug/g						
		PCB-1242		<	0.2	ug/g						
		PCB-1248		<	0.2	ug/g						
		PCB-1254		<	0.2	ug/g						
		PCB-1260			2.1	ug/g	3.33	64	40	140		
		PCB-1262		<	0.2	ug/g						
		PCB-1268		<	0.2	ug/g						
		tetrachloro-m-xylene SUR			95	%			30	150		
		decachlorobiphenyl SUR			76	%			30	150		
SW3546/8082A	LCSD11710	PCB-1016			2.9	ug/g	3.33	86	40	140	5	30
		PCB-1221		<	0.2	ug/g						
		PCB-1232		<	0.2	ug/g						
		PCB-1242		<	0.2	ug/g						
		PCB-1248		<	0.2	ug/g						
		PCB-1254		<	0.2	ug/g						
		PCB-1260			2.3	ug/g	3.33	68	40	140	6	30
		PCB-1262		<	0.2	ug/g						
		PCB-1268		<	0.2	ug/g						
		tetrachloro-m-xylene SUR			93	%			30	150		
		decachlorobiphenyl SUR			82	%			30	150		

Method	QC ID	Parameter	Associated Sample	Result	Units	Amt Added	%R	Limits		RPD	RPD Limit
SW3550C8270D	BLK11730	naphthalene		< 0.0040	ug/g						
		2-methylnaphthalene		< 0.0040	ug/g						
		acenaphthylene		< 0.0040	ug/g						
		acenaphthene		< 0.0040	ug/g						
		dibenzofuran		< 0.0040	ug/g						
		fluorene		< 0.0040	ug/g						
		phenanthrene		0.0056	ug/g		*				
		anthracene		< 0.0040	ug/g						
		fluoranthene		< 0.0040	ug/g						
		pyrene		< 0.0040	ug/g						
		benzo(a)anthracene		< 0.0040	ug/g						
		chrysene		< 0.0040	ug/g						
		benzo(b)fluoranthene		< 0.0040	ug/g						
		benzo(k)fluoranthene		< 0.0040	ug/g						
		benzo(a)pyrene		< 0.0040	ug/g						
		indeno(1,2,3-cd)pyrene		< 0.0040	ug/g						
		dibenzo(a,h)anthracene		< 0.0040	ug/g						
		benzo(g,h,i)perylene		< 0.0040	ug/g						
		2-fluorobiphenyl SUR		73	%			43	116		
		o-terphenyl SUR		103	%			33	141		
SW3550C8270D	LCS11730	naphthalene		1.2	ug/g	1.54	77	40	140		
		2-methylnaphthalene		1.3	ug/g	1.54	82	40	140		
		acenaphthylene		1.3	ug/g	1.54	81	40	140		
		acenaphthene		1.3	ug/g	1.54	81	40	140		
		dibenzofuran		< 0.019	ug/g						
		fluorene		1.3	ug/g	1.54	81	40	140		
		phenanthrene		1.4	ug/g	1.54	93	40	140		
		anthracene		1.4	ug/g	1.54	92	40	140		
		fluoranthene		1.2	ug/g	1.54	79	40	140		
		pyrene		1.8	ug/g	1.54	116	40	140		
		benzo(a)anthracene		1.5	ug/g	1.54	98	40	140		
		chrysene		1.4	ug/g	1.54	93	40	140		
		benzo(b)fluoranthene		1.6	ug/g	1.54	105	40	140		
		benzo(k)fluoranthene		1.5	ug/g	1.54	98	40	140		
		benzo(a)pyrene		1.3	ug/g	1.54	85	40	140		
		indeno(1,2,3-cd)pyrene		1.5	ug/g	1.54	98	40	140		
		dibenzo(a,h)anthracene		1.5	ug/g	1.54	97	40	140		
		benzo(g,h,i)perylene		1.4	ug/g	1.54	92	40	140		
		2-fluorobiphenyl SUR		81	%			43	116		
		o-terphenyl SUR		106	%			33	141		

Method	QC ID	Parameter	Associated Sample	Result	Units	Amt Added	%R	Limits		RPD	RPD Limit
SW3550C8270D	LCSD11730	naphthalene		1.2	ug/g	1.59	74	40	140	4	30
		2-methylnaphthalene		1.3	ug/g	1.59	80	40	140	3	30
		acenaphthylene		1.2	ug/g	1.59	78	40	140	4	30
		acenaphthene		1.2	ug/g	1.59	78	40	140	4	30
		dibenzofuran		< 0.020	ug/g						
		fluorene		1.3	ug/g	1.59	81	40	140	0	30
		phenanthrene		1.5	ug/g	1.59	93	40	140	0	30
		anthracene		1.5	ug/g	1.59	92	40	140	0	30
		fluoranthene		1.4	ug/g	1.59	88	40	140	11	30
		pyrene		1.8	ug/g	1.59	110	40	140	5	30
		benzo(a)anthracene		1.5	ug/g	1.59	97	40	140	1	30
		chrysene		1.5	ug/g	1.59	95	40	140	2	30
		benzo(b)fluoranthene		1.7	ug/g	1.59	105	40	140	0	30
		benzo(k)fluoranthene		1.6	ug/g	1.59	100	40	140	2	30
		benzo(a)pyrene		1.3	ug/g	1.59	82	40	140	3	30
		indeno(1,2,3-cd)pyrene		1.5	ug/g	1.59	96	40	140	2	30
		dibenzo(a,h)anthracene		1.5	ug/g	1.59	96	40	140	1	30
		benzo(g,h,i)perylene		1.4	ug/g	1.59	89	40	140	3	30
		2-fluorobiphenyl SUR		74	%			43	116		
		o-terphenyl SUR		105	%			33	141		

Method	QC ID	Parameter	Associated Sample		Result	Units	Amt Added	%R		Limits		RPD	RPD Limit
SW3051A6020A	BLK11707	Arsenic		<	2.5	ug/g							
		Chromium		<	5.0	ug/g							
		Copper		<	5.0	ug/g							
		Nickel		<	5.0	ug/g							
		Lead		<	2.5	ug/g							
		Zinc			7.4	ug/g			*				
SW3051A6020A	CRM11707	Arsenic			155	ug/g	219			129	240		
		Chromium			283	ug/g	375			223	414		
		Copper			144	ug/g	198			128	218		
		Nickel			234	ug/g	318			193	358		
		Lead			260	ug/g	321			207	353		
		Zinc			245	ug/g	311			190	352		
SW3051A6020A	CRMD11707	Arsenic			159	ug/g	219			129	240	3	35
		Chromium			284	ug/g	375			223	414	0	35
		Copper			147	ug/g	198			128	218	2	35
		Nickel			235	ug/g	318			193	358	1	35
		Lead			273	ug/g	321			207	353	5	35
		Zinc			247	ug/g	311			190	352	1	35
SW3051A6020A	DUP11707	Arsenic	48752-001	<	5.0	ug/g							20
		Chromium	48752-001		390	ug/g						4	20
		Lead	48752-001		100	ug/g						100 *	20
SW3051A6020A	MS11707	Arsenic	48752-001		350	ug/g	500	69	*	75	125		
		Chromium	48752-001		700	ug/g	500	57	*	75	125		
		Lead	48752-001		480	ug/g	500	35	*	75	125		
SW3051A6020A	BLK11720	Cadmium		<	0.50	ug/g							
SW3051A6020A	CRM11720	Cadmium			140	ug/g	175			111	192		
SW3051A6020A	CRMD11720	Cadmium			140	ug/g	175			111	192	0	35
SW3051A6020A	MS11720	Cadmium	48796-003		290	ug/g	316	92		75	125		
SW3051A6020A	MSD11720	Cadmium	48796-003		290	ug/g	310	95		75	125	1	20
SW7471B	BLK11716	Mercury		<	0.14	ug/g							
SW7471B	CRM11716	Mercury			0.22	ug/g	0.22			0.0908	0.351		
SW7471B	CRMD11716	Mercury			0.20	ug/g	0.22			0.0908	0.351	10	35
SW7471B	DUP11716	Mercury	48735-001	<	0.13	ug/g							35
SW7471B	MS11716	Mercury	48735-001		0.54	ug/g	0.344	157	*	80	120		

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124 Heritage Avenue #16
Portsmouth, NH 03801
603-436-2001
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CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

48753

Company Name: Inter-Fluve

Company Address: 220 Concord Ave, 2nd floor, Cambridge MA 02138

Report To: Candice Constantine

Phone #: 617-909-7569

Invoice to: Candice Constantine

Email: cconstantine@interfluve.com

PO #:

Project Name: Becker Pond Dam Removal

Project #:

Project Location: NH [✓ MA] ME VT

Accreditation Required? N/Y:

Protocol: RCRA SDWA NPDES MCP NHDES DOD

Reporting Limits: QAPP GW-1 S-1 EPA DW Other

Quote #

☐ NH Reimbursement Pricing

ANALYSIS REQUEST

Lab Sample ID (Lab Use Only)	Field ID	# CONTAINERS	Matrix: WATER	Matrix: SOLID	Matrix: OTHER	Preservation Method: HCl	Preservation Method: HNO_3	Preservation Method: H_2SO_4	Preservation Method: NaOH	Preservation Method: MeOH	Sampling: DATE	Sampling: TIME	Sampling: SAMPLER
4875301	D1										5/20/19	12:15	
-02	D2											12:30	
-03	W1											12:45	
-04	W2											18:00	
-05	W3											18:30	
-06	W4											19:00	
											AS per bottles		

Lab Sample ID	☐ VOC 8260 ☐ VOC 8260 NHDES ☐ VOC 8260 MADEP	☐ VOC 624.1 ☐ VOC BTEX MtBE, only ☐ VOC 8021VT	☐ VPH MADEP ☐ GRO 8015 ☐ 1,4-Dioxane	☐ VOC 524.2 ☐ VOC 524.2 NH List ☐ Gases-List:	☐ TPH ☐ DRO 8015 ☒ EPH MADEP ☐ TPH Fingerprint	☒ 8270PAH ☐ 8270ABN ☐ 625.1 ☐ EDB	☒ 8082 PCB ☒ 8081 Pesticides ☐ 608.3 Pest/PCB	☐ O&G 1664 ☐ Mineral O&G 1664	☐ pH ☐ BOD ☐ Conductivity ☐ Turbidity ☐ Apparent Color	☐ TSS ☐ TDS ☐ TS ☐ TVS ☐ Alkalinity ☐ Acidity	☐ RCRA Metals ☐ Priority Pollutant Metals ☐ TAL Metals ☐ Hardness	☐ Total Metals-list: As, Cd, Cr, Cu, Hg, Ni, Pb, Zn	☐ Dissolved Metals-list:	☐ Ammonia ☐ COD ☐ TKN ☐ TN ☐ TON ☐ TOC ☐ Ferrous Iron	☐ T-Phosphorus ☐ Bacteria P/A ☐ Bacteria MPN ☐ Enterococci	☐ Cyanide ☐ Sulfide ☐ Nitrate + Nitrite ☐ Ortho P ☐ Phenols	☐ Nitrate ☐ Nitrite ☐ Chloride ☐ Sulfate ☐ Bromide ☐ Fluoride	☐ Corrosivity ☐ Reactive CN ☐ Reactive S- ☐ Ignitibility/FP	☐ TCLP Metals ☐ TCLP VOC ☐ TCLP SVOC ☐ TCLP Pesticide	Subcontract: ☒ Grain Size ☐ Herbicides ☐ Asbestos ☐ PFAS	TOC - sub	% Moisture		Grab (G) or Composite (C)
4875301					X	X	X					X								X	X	X		
-02																								
-03																								
-04																								
-05																								
-06																								
																						GPM order 5/23/19		

TAT REQUESTED

Priority (24 hr)* ☐
Expedited (48 hr)* ☐
Standard ☐
(10 Business Days)
*Date Needed

See absoluteresourceassociates.com for sample acceptance policy and current accreditation lists.

SPECIAL INSTRUCTIONS

REPORTING INSTRUCTIONS ☐ PDF (e-mail address)

☐ HARD COPY REQUIRED ☐ EDD

RECEIVED ON ICE ☒ YES ☐ NO

TEMPERATURE 13 °C

CUSTODY RECORD

QSD-01 Revision 11/08/18

Relinquished by	Date	Time	Received by	Date	Time
Relinquished by Sampler: Candice Constantine	5/21/19	2:15	Received by: UPS	5/21/19	2:15
Relinquished by:			Received by:		
Relinquished by: UPS	5/22/19	1415	Received by Laboratory:	5/22/19	1415

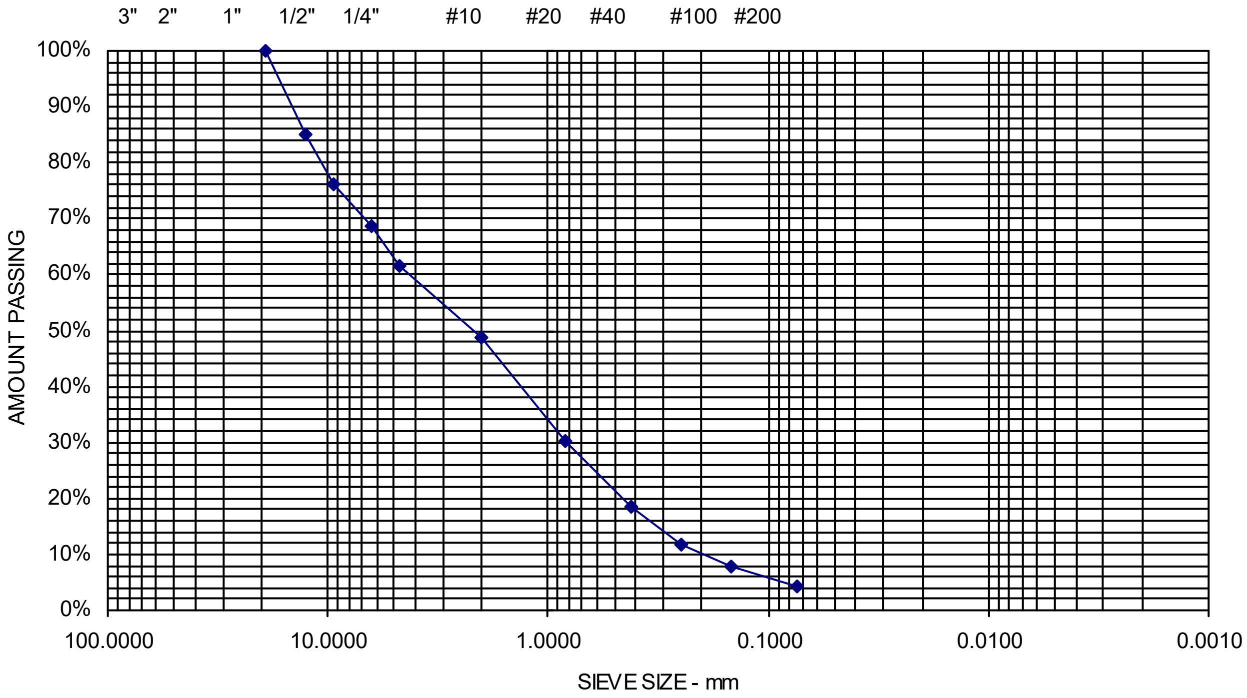
S.W.COLE
ENGINEERING,INC.

Report of Gradation

ASTM C-117 & C-136

Project Name	PORTSMOUTH NH - ARA PROJECT 48753 - CONSTRUCTION MATERIALS TESTING SERVICES	Project Number	19-0720
Client	ABSOLUTE RESOURCE ASSOCIATES	Lab ID	18497S
		Date Received	6/5/2019
		Date Completed	6/12/2019
Material Source	**D1**	Tested By	BRADLEY GERSCHWILER

STANDARD DESIGNATION (mm/µm)	SIEVE SIZE	AMOUNT PASSING (%)	
19.0 mm	**3/4"**	**100**	
12.5 mm	**1/2"**	**85**	
9.5 mm	**3/8"**	**76**	
6.3 mm	**1/4"**	**69**	
4.75 mm	**No. 4**	**62**	38.3% Gravel
2.00 mm	**No. 10**	**49**	
850 um	**No. 20**	**30**	
425 um	**No. 40**	**18**	57.3% Sand
250 um	**No. 60**	**12**	
150 um	**No. 100**	**8**	
75 um	**No. 200**	**4.4**	4.4% Fines



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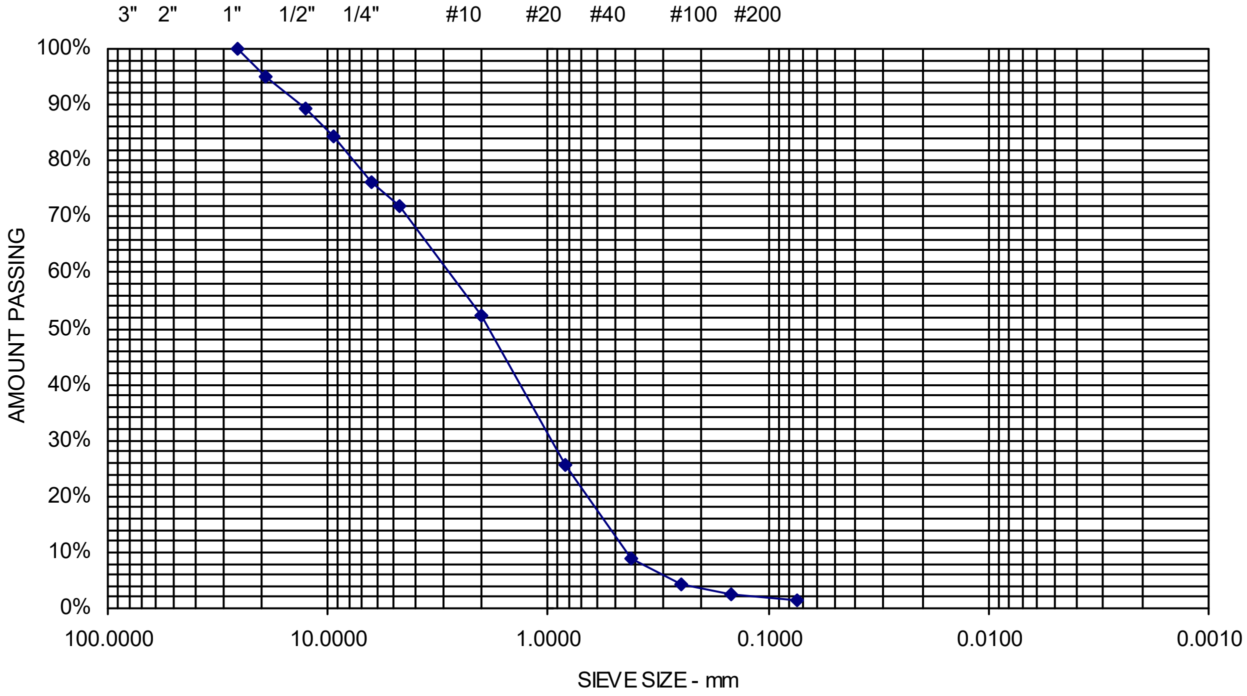
Report of Gradation

ASTM C-117 & C-136

Project Name	PORTSMOUTH NH - ARA PROJECT 48753 - CONSTRUCTION MATERIALS TESTING SERVICES	Project Number	19-0720
Client	ABSOLUTE RESOURCE ASSOCIATES	Lab ID	18498S
		Date Received	6/5/2019
		Date Completed	6/12/2019
Material Source	**D2**	Tested By	BRADLEY GERSCHWILER

STANDARD DESIGNATION (mm/µm)	SIEVE SIZE	AMOUNT PASSING (%)	
25.0 mm	**1"**	**100**	
19.0 mm	**3/4"**	**95**	
12.5 mm	**1/2"**	**89**	
9.5 mm	**3/8"**	**84**	
6.3 mm	**1/4"**	**76**	
4.75 mm	**No. 4**	**72**	28% Gravel
2.00 mm	**No. 10**	**52**	
850 um	**No. 20**	**26**	
425 um	**No. 40**	**9**	70.5% Sand
250 um	**No. 60**	**4**	
150 um	**No. 100**	**3**	
75 um	**No. 200**	**1.5**	1.5% Fines



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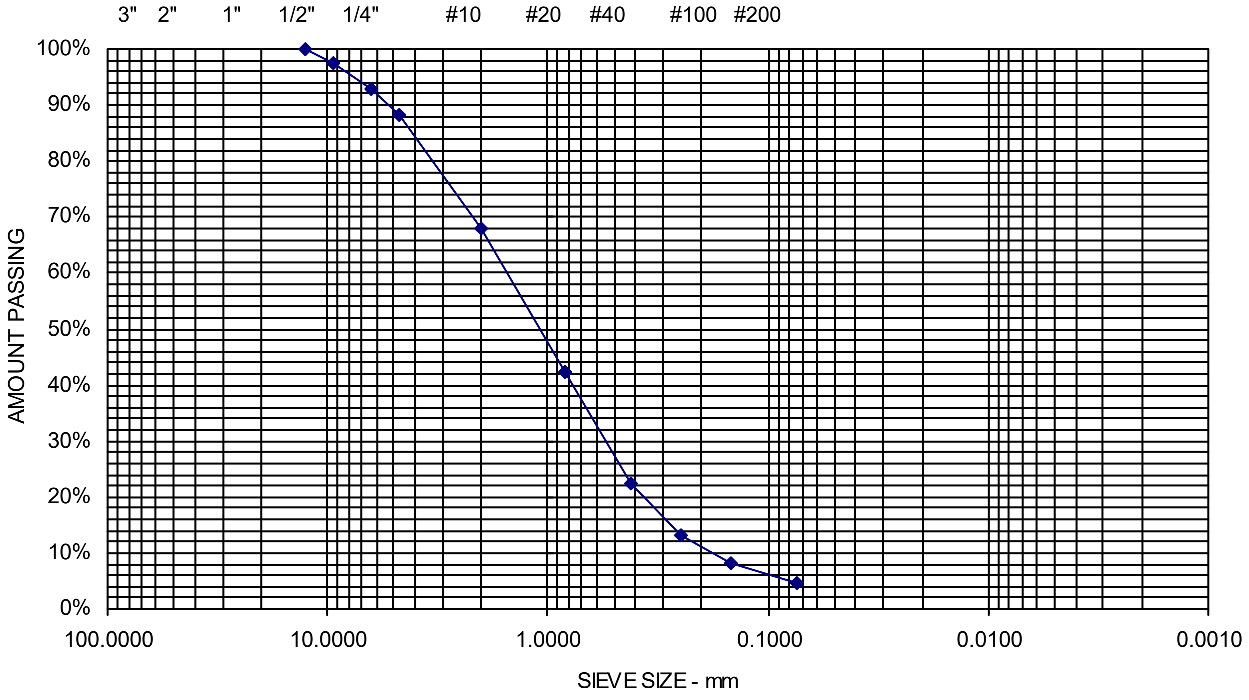
Report of Gradation

ASTM C-117 & C-136

Project Name	PORTSMOUTH NH - ARA PROJECT 48753 - CONSTRUCTION MATERIALS TESTING SERVICES	Project Number	19-0720
		Lab ID	18499S
Client	ABSOLUTE RESOURCE ASSOCIATES	Date Received	6/5/2019
		Date Completed	6/12/2019
Material Source	**U1**	Tested By	BRADLEY GERSCHWILER

STANDARD DESIGNATION (mm/µm)	SIEVE SIZE	AMOUNT PASSING (%)	
12.5 mm	**1/2"**	**100**	
9.5 mm	**3/8"**	**97**	
6.3 mm	**1/4"**	**93**	
4.75 mm	**No. 4**	**88**	11.8% Gravel
2.00 mm	**No. 10**	**68**	
850 um	**No. 20**	**43**	
425 um	**No. 40**	**22**	83.4% Sand
250 um	**No. 60**	**13**	
150 um	**No. 100**	**8**	
75 um	**No. 200**	**4.8**	4.8% Fines



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Report of Gradation

ASTM C-117 & C-136

Project Name PORTSMOUTH NH - ARA PROJECT 48753 - CONSTRUCTION MATERIALS TESTING SERVICES

Client ABSOLUTE RESOURCE ASSOCIATES

Material Source **U2**

Project Number 19-0720

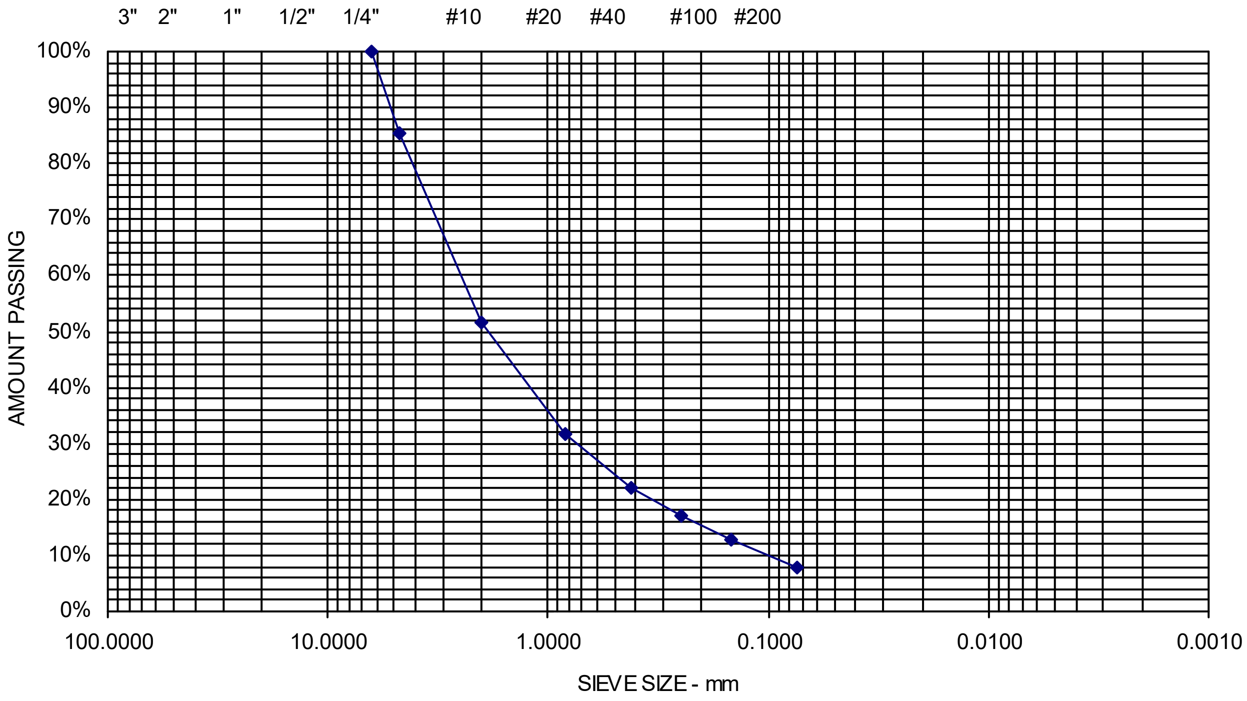
Lab ID 18500S

Date Received 6/5/2019

Date Completed 6/12/2019

Tested By BRADLEY GERSCHWILER

STANDARD DESIGNATION (mm/µm)	SIEVE SIZE	AMOUNT PASSING (%)	
6.3 mm	**1/4"**	**100**	
4.75 mm	**No. 4**	**86**	14.4% Gravel
2.00 mm	**No. 10**	**52**	
850 um	**No. 20**	**32**	
425 um	**No. 40**	**22**	77.7% Sand
250 um	**No. 60**	**17**	
150 um	**No. 100**	**13**	
75 um	**No. 200**	**7.8**	7.8% Fines



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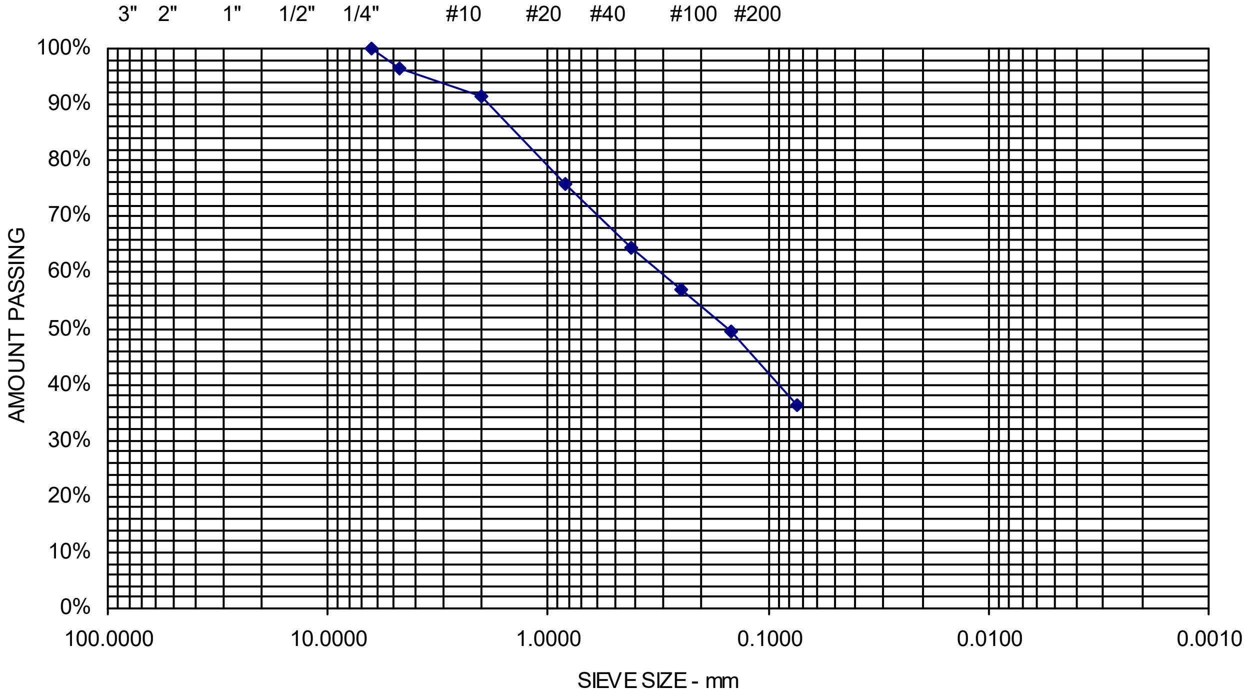
Report of Gradation

ASTM C-117 & C-136

Project Name	PORTSMOUTH NH - ARA PROJECT 48753 - CONSTRUCTION MATERIALS TESTING SERVICES	Project Number	19-0720
Client	ABSOLUTE RESOURCE ASSOCIATES	Lab ID	18501S
		Date Received	6/5/2019
		Date Completed	6/12/2019
Material Source	**U3**	Tested By	BRADLEY GERSCHWILER

STANDARD DESIGNATION (mm/µm)	SIEVE SIZE	AMOUNT PASSING (%)	
6.3 mm	**1/4"**	**100**	
4.75 mm	**No. 4**	**96**	3.6% Gravel
2.00 mm	**No. 10**	**91**	
850 um	**No. 20**	**76**	
425 um	**No. 40**	**64**	60.1% Sand
250 um	**No. 60**	**57**	
150 um	**No. 100**	**50**	
75 um	**No. 200**	**36.3**	36.3% Fines



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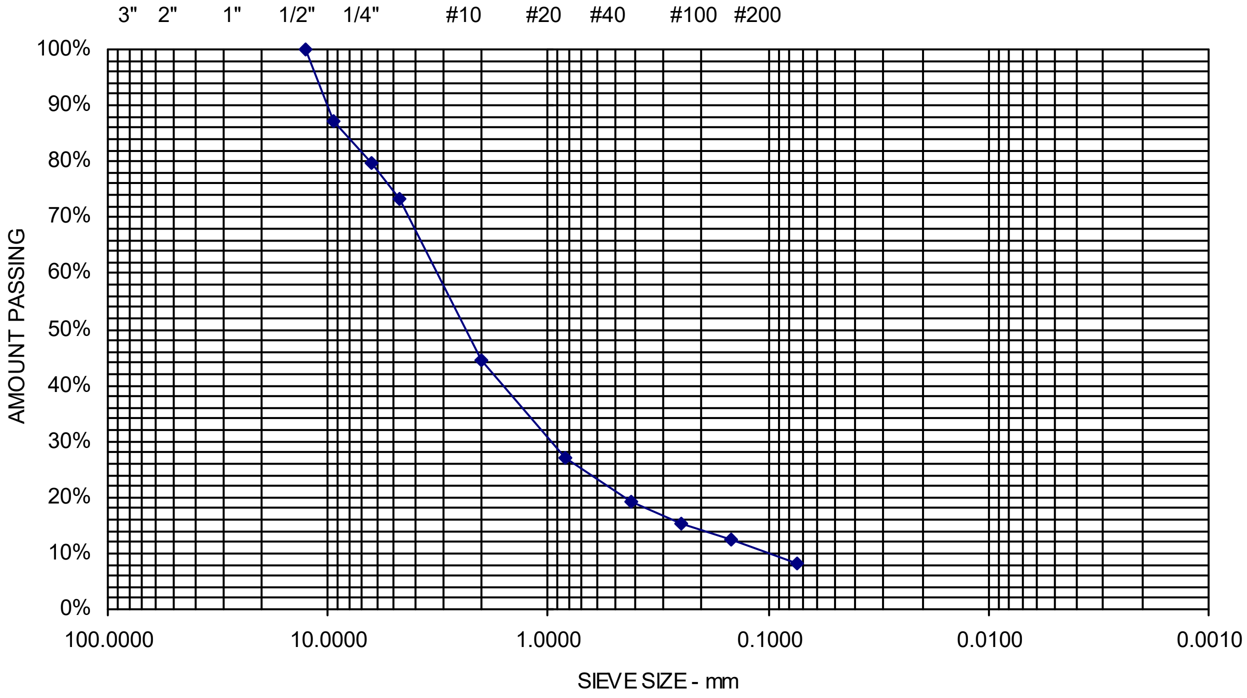
Report of Gradation

ASTM C-117 & C-136

Project Name	PORTSMOUTH NH - ARA PROJECT 48753 - CONSTRUCTION MATERIALS TESTING SERVICES	Project Number	19-0720
Client	ABSOLUTE RESOURCE ASSOCIATES	Lab ID	18502S
		Date Received	6/5/2019
		Date Completed	6/12/2019
Material Source	**U4**	Tested By	BRADLEY GERSCHWILER

STANDARD DESIGNATION (mm/µm)	SIEVE SIZE	AMOUNT PASSING (%)	
12.5 mm	**1/2"**	**100**	
9.5 mm	**3/8"**	**87**	
6.3 mm	**1/4"**	**80**	
4.75 mm	**No. 4**	**73**	26.6% Gravel
2.00 mm	**No. 10**	**45**	
850 um	**No. 20**	**27**	
425 um	**No. 40**	**19**	65.1% Sand
250 um	**No. 60**	**15**	
150 um	**No. 100**	**12**	
75 um	**No. 200**	**8.3**	8.3% Fines



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Portsmouth, NH 03801
603-436-2001
absoluteresourceassociates.com

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

48753

Company Name: Inter-Fluve

Company Address: 220 Concord Ave, 3rd floor Cambridge MA 02138

Report To: Candice Constantine

Phone #: 617-909-7569

Invoice to: Candice Constantine

Email: cconstantine@interfluve.com

PO #:

Project Name: Becker Pond Dam Removal

Project #:

Project Location: NH [✓ MA] ME VT

Accreditation Required? N/Y:

Protocol: RCRA SDWA NPDES MCP NHDES DOD

Reporting Limits: QAPP GW-1 S-1 EPA DW Other

Quote #

☐ NH Reimbursement Pricing

ANALYSIS REQUEST

Lab Sample ID (Lab Use Only)	Field ID	# CONTAINERS	Matrix: WATER	SOLID	OTHER	Preservation Method: HCl	HNO_3	H_2SO_4	NaOH	MeOH	Sampling: DATE	TIME	SAMPLER	☐ VOC 8260 ☐ VOC 8260 NHDES ☐ VOC 8260 MADEP	☐ VOC 624.1 ☐ VOC BTEX MtBE, only ☐ VOC 8021VT	☐ VPH MADEP ☐ GRO 8015 ☐ 1,4-Dioxane	☐ VOC 524.2 ☐ VOC 524.2 NH List ☐ Gases-List:	☐ TPH ☐ DRO 8015 ☒ EPH MADEP ☐ TPH Fingerprint	☒ 8270PAH ☐ 8270ABN ☐ 625.1 ☐ EDB	☒ 8082 PCB ☒ 8081 Pesticides ☐ 608.3 Pest/PCB	☐ O&G 1664 ☐ Mineral O&G 1664	☐ pH ☐ BOD ☐ Conductivity ☐ Turbidity ☐ Apparent Color	☐ TSS ☐ TDS ☐ TS ☐ TVS ☐ Alkalinity ☐ Acidity	☐ RCRA Metals ☐ Priority Pollutant Metals ☐ TAL Metals ☐ Hardness	☐ Total Metals-list: As, Cd, Cr, Cu, Hg, Ni, Pb, Zn	☐ Dissolved Metals-list:	☐ Ammonia ☐ COD ☐ TKN ☐ TN ☐ TON ☐ TOC ☐ Ferrous Iron	☐ T-Phosphorus ☐ Bacteria P/A ☐ Bacteria MPN ☐ Enterococci	☐ Cyanide ☐ Sulfide ☐ Nitrate + Nitrite ☐ Ortho P ☐ Phenols	☐ Nitrate ☐ Nitrite ☐ Chloride ☐ Sulfate ☐ Bromide ☐ Fluoride	☐ Corrosivity ☐ Reactive CN ☐ Reactive S- ☐ Ignitibility/FP	☐ TCLP Metals ☐ TCLP VOC ☐ TCLP SVOC ☐ TCLP Pesticide	Subcontract: ☒ Grain Size ☐ Herbicides ☐ Asbestos ☐ PFAS	TOC - sub	% Moisture		Grab (G) or Composite (C)
4875301	D1										5/20/19	12:15						X	X	X					X								X	X	X		
-02	D2											12:30																									
-03	U1											12:45																									
-04	U2											18:00																									
-05	U3											18:30																									
-06	U4											19:00																									

As per bottles

per order 5/23/19

TAT REQUESTED
Priority (24 hr)* ☐
Expedited (48 hr)* ☐
Standard ☐
(10 Business Days)
*Date Needed

See absoluteresourceassociates.com for sample acceptance policy and current accreditation lists.

SPECIAL INSTRUCTIONS

REPORTING INSTRUCTIONS ☐ PDF (e-mail address)

☐ HARD COPY REQUIRED ☐ EDD

RECEIVED ON ICE ☑ YES ☐ NO

TEMPERATURE 3 °C

CUSTODY RECORD

Relinquished by	Date	Time	Received by	Date	Time
Relinquished by Sampler: Candice Constantine	5/21/19	2:15	Received by: UPS	5/21/19	2:15
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by: UPS	5/22/19	1415	Received by Laboratory:	5/22/19	1415

QSD-01 Revision 11/08/18

eurofins | Environment Testing
TestAmerica

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ANALYTICAL REPORT

Eurofins TestAmerica, Pittsburgh
301 Alpha Drive
RIDC Park
Pittsburgh, PA 15238
Tel: (412)963-7058

Laboratory Job ID: 180-90529-1
Client Project/Site: 48753

For:
Absolute Resource Associates
124 Heritage Ave
Unit 16
Portsmouth, New Hampshire 03801

Attn: Mr. Aaron DeWees

Authorized for release by:
6/10/2019 4:15:22 PM

Debra Bowen, Project Manager I
(412)963-2445
debra.bowen@testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

PA Lab ID: 02-00416

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Job ID: 180-90529-1

Laboratory: Eurofins TestAmerica, Pittsburgh

Narrative

Job Narrative
180-90529-1

Receipt

The samples were received on 5/24/2019 8:40 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.0º C.

General Chemistry

Several samples were analyed at a dilution due to the abundance of target analytes. The reporting limits have been adjusted accordingly.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Laboratory: Eurofins TestAmerica, Pittsburgh

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	EPA Region	Identification Number	Expiration Date
New Hampshire	NELAP	1	2030	04-04-20

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
2540G		Solid	Percent Moisture
2540G		Solid	Percent Solids
WALKLEY BLACK		Solid	Total Organic Carbon

Sample Summary

Client: Absolute Resource Associates
Project/Site: 48753

Job ID: 180-90529-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
180-90529-1	D1	Solid	05/20/19 12:15	05/24/19 08:40	
180-90529-2	D2	Solid	05/20/19 12:30	05/24/19 08:40	
180-90529-3	U1	Solid	05/20/19 12:45	05/24/19 08:40	
180-90529-4	U2	Solid	05/20/19 18:00	05/24/19 08:40	
180-90529-5	U3	Solid	05/20/19 18:30	05/24/19 08:40	
180-90529-6	U4	Solid	05/20/19 19:00	05/24/19 08:40	

Method Summary

Client: Absolute Resource Associates
Project/Site: 48753

Job ID: 180-90529-1

Method	Method Description	Protocol	Laboratory
2540G	SM 2540G	SM22	TAL PIT
WALKLEY BLACK	Organic Carbon, Total (TOC)	MSA	TAL PIT

Protocol References:

MSA = "Methods Of Soil Analysis, Chemical And Microbiological Properties", Part 2, 2nd Ed., 1982 And Subsequent Revisions.

SM22 = Standard Methods For The Examination Of Water And Wastewater, 22nd Edition

Laboratory References:

TAL PIT = Eurofins TestAmerica, Pittsburgh, 301 Alpha Drive, RIDC Park, Pittsburgh, PA 15238, TEL (412)963-7058

Lab Chronicle

Client: Absolute Resource Associates
Project/Site: 48753

Job ID: 180-90529-1

Client Sample ID: D1

Lab Sample ID: 180-90529-1

Date Collected: 05/20/19 12:15
Date Received: 05/24/19 08:40

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	2540G		1			280172	05/30/19 11:09	RJP	TAL PIT
	Instrument ID: NOEQUIP									

Client Sample ID: D1

Lab Sample ID: 180-90529-1

Date Collected: 05/20/19 12:15
Date Received: 05/24/19 08:40

Matrix: Solid
Percent Solids: 33.3

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	WALKLEY BLACK		1	2.50 g	2.50 g	280364	05/31/19 14:01	CAK	TAL PIT
	Instrument ID: NOEQUIP									

Client Sample ID: D2

Lab Sample ID: 180-90529-2

Date Collected: 05/20/19 12:30
Date Received: 05/24/19 08:40

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	2540G		1			280172	05/30/19 11:09	RJP	TAL PIT
	Instrument ID: NOEQUIP									

Client Sample ID: D2

Lab Sample ID: 180-90529-2

Date Collected: 05/20/19 12:30
Date Received: 05/24/19 08:40

Matrix: Solid
Percent Solids: 70.7

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	WALKLEY BLACK		1	2.50 g	2.50 g	280364	05/31/19 14:01	CAK	TAL PIT
	Instrument ID: NOEQUIP									

Client Sample ID: U1

Lab Sample ID: 180-90529-3

Date Collected: 05/20/19 12:45
Date Received: 05/24/19 08:40

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	2540G		1			280172	05/30/19 11:09	RJP	TAL PIT
	Instrument ID: NOEQUIP									

Client Sample ID: U1

Lab Sample ID: 180-90529-3

Date Collected: 05/20/19 12:45
Date Received: 05/24/19 08:40

Matrix: Solid
Percent Solids: 56.9

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	WALKLEY BLACK		2	1.25 g	2.50 g	280364	05/31/19 14:01	CAK	TAL PIT
	Instrument ID: NOEQUIP									

Lab Chronicle

Client: Absolute Resource Associates
Job ID: 180-90529-1
Project/Site: 48753

Client Sample ID: U2
Lab Sample ID: 180-90529-4

Date Collected: 05/20/19 18:00
Matrix: Solid
Date Received: 05/24/19 08:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	2540G		1			280172	05/30/19 11:09	RJP	TAL PIT
	Instrument ID: NOEQUIP									

Client Sample ID: U2
Lab Sample ID: 180-90529-4

Date Collected: 05/20/19 18:00
Matrix: Solid
Date Received: 05/24/19 08:40
Percent Solids: 21.0

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	WALKLEY BLACK		5	0.50 g	2.50 g	280364	05/31/19 14:01	CAK	TAL PIT
	Instrument ID: NOEQUIP									

Client Sample ID: U3
Lab Sample ID: 180-90529-5

Date Collected: 05/20/19 18:30
Matrix: Solid
Date Received: 05/24/19 08:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	2540G		1			280172	05/30/19 11:09	RJP	TAL PIT
	Instrument ID: NOEQUIP									

Client Sample ID: U3
Lab Sample ID: 180-90529-5

Date Collected: 05/20/19 18:30
Matrix: Solid
Date Received: 05/24/19 08:40
Percent Solids: 26.4

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	WALKLEY BLACK		5	0.50 g	2.50 g	280364	05/31/19 14:01	CAK	TAL PIT
	Instrument ID: NOEQUIP									

Client Sample ID: U4
Lab Sample ID: 180-90529-6

Date Collected: 05/20/19 19:00
Matrix: Solid
Date Received: 05/24/19 08:40

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	2540G		1			280172	05/30/19 11:09	RJP	TAL PIT
	Instrument ID: NOEQUIP									

Client Sample ID: U4
Lab Sample ID: 180-90529-6

Date Collected: 05/20/19 19:00
Matrix: Solid
Date Received: 05/24/19 08:40
Percent Solids: 28.5

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	WALKLEY BLACK		5	0.50 g	2.50 g	280364	05/31/19 14:01	CAK	TAL PIT
	Instrument ID: NOEQUIP									

Laboratory References:

TAL PIT = Eurofins TestAmerica, Pittsburgh, 301 Alpha Drive, RIDC Park, Pittsburgh, PA 15238, TEL (412)963-7058

Analyst References:

Lab: TAL PIT

Batch Type: Analysis

CAK = Chuck Kieda

RJP = Rockwell Pokrant

Client Sample Results

1 2 3 4 5 6 7 8 9 10 11 12 13

Client Sample ID: D1

Lab Sample ID: 180-90529-1
Date Collected: 05/20/19 12:15
Matrix: Solid
Date Received: 05/24/19 08:40

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	66.7		0.1	0.1	%			05/30/19 11:09	1
Percent Solids	33.3		0.1	0.1	%			05/30/19 11:09	1

Client Sample ID: D1

Lab Sample ID: 180-90529-1
Date Collected: 05/20/19 12:15
Matrix: Solid
Date Received: 05/24/19 08:40
Percent Solids: 33.3

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	30000		750	750	mg/Kg	☼		05/31/19 14:01	1

Client Sample ID: D2

Lab Sample ID: 180-90529-2
Date Collected: 05/20/19 12:30
Matrix: Solid
Date Received: 05/24/19 08:40

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	29.3		0.1	0.1	%			05/30/19 11:09	1
Percent Solids	70.7		0.1	0.1	%			05/30/19 11:09	1

Client Sample ID: D2

Lab Sample ID: 180-90529-2
Date Collected: 05/20/19 12:30
Matrix: Solid
Date Received: 05/24/19 08:40
Percent Solids: 70.7

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	5600		350	350	mg/Kg	☼		05/31/19 14:01	1

Client Sample ID: U1

Lab Sample ID: 180-90529-3
Date Collected: 05/20/19 12:45
Matrix: Solid
Date Received: 05/24/19 08:40

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	43.1		0.1	0.1	%			05/30/19 11:09	1
Percent Solids	56.9		0.1	0.1	%			05/30/19 11:09	1

Client Sample ID: U1

Lab Sample ID: 180-90529-3
Date Collected: 05/20/19 12:45
Matrix: Solid
Date Received: 05/24/19 08:40
Percent Solids: 56.9

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	15000		880	880	mg/Kg	☼		05/31/19 14:01	2

Client Sample ID: U2

Lab Sample ID: 180-90529-4
Date Collected: 05/20/19 18:00
Matrix: Solid
Date Received: 05/24/19 08:40

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	79.0		0.1	0.1	%			05/30/19 11:09	1

Client Sample Results

Client Sample ID: U2

Lab Sample ID: 180-90529-4
Date Collected: 05/20/19 18:00
Date Received: 05/24/19 08:40
Matrix: Solid

General Chemistry (Continued)

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	21.0		0.1	0.1	%			05/30/19 11:09	1

Client Sample ID: U2

Lab Sample ID: 180-90529-4
Date Collected: 05/20/19 18:00
Date Received: 05/24/19 08:40
Matrix: Solid
Percent Solids: 21.0

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	130000		5900	5900	mg/Kg	☼		05/31/19 14:01	5

Client Sample ID: U3

Lab Sample ID: 180-90529-5
Date Collected: 05/20/19 18:30
Date Received: 05/24/19 08:40
Matrix: Solid

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	73.6		0.1	0.1	%			05/30/19 11:09	1
Percent Solids	26.4		0.1	0.1	%			05/30/19 11:09	1

Client Sample ID: U3

Lab Sample ID: 180-90529-5
Date Collected: 05/20/19 18:30
Date Received: 05/24/19 08:40
Matrix: Solid
Percent Solids: 26.4

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	130000		4700	4700	mg/Kg	☼		05/31/19 14:01	5

Client Sample ID: U4

Lab Sample ID: 180-90529-6
Date Collected: 05/20/19 19:00
Date Received: 05/24/19 08:40
Matrix: Solid

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	71.5		0.1	0.1	%			05/30/19 11:09	1
Percent Solids	28.5		0.1	0.1	%			05/30/19 11:09	1

Client Sample ID: U4

Lab Sample ID: 180-90529-6
Date Collected: 05/20/19 19:00
Date Received: 05/24/19 08:40
Matrix: Solid
Percent Solids: 28.5

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	110000		4400	4400	mg/Kg	☼		05/31/19 14:01	5

QC Sample Results

Method: WALKLEY BLACK - Organic Carbon, Total (TOC)

Lab Sample ID: MB 180-280364/2
Client Sample ID: Method Blank
Matrix: Solid
Prep Type: Total/NA
Analysis Batch: 280364

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	ND		250	250	mg/Kg			05/31/19 14:01	1

Lab Sample ID: LCS 180-280364/1
Client Sample ID: Lab Control Sample
Matrix: Solid
Prep Type: Total/NA
Analysis Batch: 280364

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Total Organic Carbon			471000	490000		mg/Kg		104	80 - 120		

Lab Sample ID: 180-90529-3 DU
Client Sample ID: U1
Matrix: Solid
Prep Type: Total/NA
Analysis Batch: 280364

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Total Organic Carbon	15000			15600		mg/Kg	☼			6	20

General Chemistry

Analysis Batch: 280172

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-90529-1	D1	Total/NA	Solid	2540G	
180-90529-2	D2	Total/NA	Solid	2540G	
180-90529-3	U1	Total/NA	Solid	2540G	
180-90529-4	U2	Total/NA	Solid	2540G	
180-90529-5	U3	Total/NA	Solid	2540G	
180-90529-6	U4	Total/NA	Solid	2540G	

Analysis Batch: 280364

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-90529-1	D1	Total/NA	Solid	WALKLEY BLACK	
180-90529-2	D2	Total/NA	Solid	WALKLEY BLACK	
180-90529-3	U1	Total/NA	Solid	WALKLEY BLACK	
180-90529-4	U2	Total/NA	Solid	WALKLEY BLACK	
180-90529-5	U3	Total/NA	Solid	WALKLEY BLACK	
180-90529-6	U4	Total/NA	Solid	WALKLEY BLACK	
MB 180-280364/2	Method Blank	Total/NA	Solid	WALKLEY BLACK	
LCS 180-280364/1	Lab Control Sample	Total/NA	Solid	WALKLEY BLACK	
180-90529-3 DU	U1	Total/NA	Solid	WALKLEY BLACK	

Absolute Resource associates

SUBCONTRACT CHAIN OF CUSTODY DOCUMENTATION

Client:	Absolute Resource Associates	Contact:	Jennifer Lowe	Phone: 603-436-2001	Fax:	Page 1 of 1
Report to:	Jennifer Lowe/Charles Leahy	Address:	124 Heritage Ave, #16	Project Name/Number: 48153		
Invoice to:	cathyd@absoluteresourceassociates.com		Portsmouth, NH 03801	Project State: NH MA ME VT		
PO#: 48753 Quote #:				Protocol: RCRA SDWA NPDES MCP NHDES Other		

Lab Number: (assigned by laboratory)	Field ID: (must agree with container)	Date Sampled	Time Sampled	Sampled By	Container Size (mL)	Container Type (P/G/T)	Field Preservation	Matrix S=Soil W=Water	Analyses Requested: Special Instructions:
	D1	5/20/19	12:15		2oz	G	None	S	TOC
	D2		12:30						
	U1		12:45						
	U2		18:00						
	U3		18:30						
	U4		19:00						

180-90529 Chain of Custody

Subcontract Laboratory: Test America - Pittsburgh

Relinquished by:	Date: 5/23/19	Time: 12:07pm	Received by:	Date: 5-23-19	Time: 1207
Relinquished by:	Date: 5-23-19	Time: 1810	Received by:	Date: 5/24/19	Time: 0840
Relinquished by:	Date:	Time:	Received by:	Date:	Time:

Reporting Instructions: PDF (Email Address: jenniferl@absoluteresourceassociates.com; charlesl@absoluteresourceassociates.com)

Excel File: Y / N

Received on ice? [✓ Y] N

Temp: 3.0

TAT Requested: Priority (24hr) Expedited (48hr) 10 Business days Date needed:

Comments:

QSD-21 2/15/19 Rev1 ajd (pg 1/1)

Login Sample Receipt Checklist

Client: Absolute Resource Associates

Job Number: 180-90529-1

Login Number: 90529
List Number: 1
Creator: Neri, Tom

List Source: Eurofins TestAmerica, Pittsburgh

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

PAGE 1 OF 1

Absolute Resource
associates

124 Heritage Avenue #16
Portsmouth, NH 03801
603-436-2001
absoluteresourceassociates.com

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

48753

Company Name: Inter-Fluve
Company Address: 220 Concord Ave, 3rd floor Cambridge MA 02138
Report To: Candice Constantine
Phone #: 617-909-7569
Invoice to: Candice Constantine
Email: cconstantine@interfluve.com
PO #:

Project Name: Becker Pond Dam Removal
Project #:
Project Location: NH [✓ MA] ME VT
Accreditation Required? N/Y:
Protocol: RCRA SDWA NPDES MCP NHDES DOD
Reporting Limits: QAPP GW-1 S-1 EPA DW Other
Quote #
☐ NH Reimbursement Pricing

Lab Sample ID (Lab Use Only)	Field ID	# CONTAINERS	Matrix			Preservation Method					Sampling		
			WATER	SOLID	OTHER	HCl	HNO_3	H_2SO_4	NaOH	MeOH	DATE	TIME	SAMPLER
4875301	D1										5/20/19	12:15	
-02	D2											12:30	
-03	U1											12:45	
-04	U2											18:00	
-05	U3											18:30	
-06	U4											19:00	
											AD per bottles		

ANALYSIS REQUEST

Lab Sample ID	☐ VOC 8260 ☐ VOC 8260 NHDES ☐ VOC 8260 MADEP	☐ VOC 624.1 ☐ VOC BTEX MtBE, only ☐ VOC 8021VT	☐ VPH MADEP ☐ GRO 8015 ☐ 1,4-Dioxane	☐ VOC 524.2 ☐ VOC 524.2 NH List ☐ Gases-List:	☐ TPH ☐ DRO 8015 ☒ EPH MADEP ☐ TPH Fingerprint	☒ 8270PAH ☐ 8270ABN ☐ 625.1 ☐ EDB	☒ 8082 PCB ☒ 8081 Pesticides ☐ 608.3 Pest/PCB	☐ O&G 1664 ☐ Mineral O&G 1664	☐ pH ☐ BOD ☐ Conductivity ☐ Turbidity ☐ Apparent Color	☐ TSS ☐ TDS ☐ TS ☐ TVS ☐ Alkalinity ☐ Acidity	☐ RCRA Metals ☐ Priority Pollutant Metals ☐ TAL Metals ☐ Hardness	☐ Total Metals-list: As, Cd, Cr, Cu, Hg, Ni, Pb, Zn	☐ Dissolved Metals-list:	☐ Ammonia ☐ COD ☐ TKN ☐ TN ☐ TON ☐ TOC ☐ Ferrous Iron	☐ T-Phosphorus ☐ Bacteria P/A ☐ Bacteria MPN ☐ Enterococci	☐ Cyanide ☐ Sulfide ☐ Nitrate + Nitrite ☐ Ortho P ☐ Phenols	☐ Nitrate ☐ Nitrite ☐ Chloride ☐ Sulfate ☐ Bromide ☐ Fluoride	☐ Corrosivity ☐ Reactive CN ☐ Reactive S- ☐ Ignitibility/FP	☐ TCLP Metals ☐ TCLP VOC ☐ TCLP SVOC ☐ TCLP Pesticide	Subcontract: ☒ Grain Size ☐ Herbicides ☐ Asbestos ☐ PFAS	TOC - sub	% Moisture		Grab (G) or Composite (C)
4875301					X	X	X					X								X	X	Y		
-02																								
-03																								
-04																								
-05																								
-06																								

Ppu order 5/23/19

TAT REQUESTED
Priority (24 hr)* ☐
Expedited (48 hr)* ☐
Standard (10 Business Days) ☐
*Date Needed

See absoluteresourceassociates.com for sample acceptance policy and current accreditation lists.

SPECIAL INSTRUCTIONS

REPORTING INSTRUCTIONS ☐ PDF (e-mail address)
☐ HARD COPY REQUIRED ☐ EDD

RECEIVED ON ICE ☑ YES ☐ NO
TEMPERATURE 3 °C

CUSTODY RECORD

	Date	Time		Date	Time
Relinquished by Sampler: Candice Constantine	5/21/19	2:15	Received by: UPS	5/21/19	2:15
Relinquished by:			Received by:		
Relinquished by: UPS	5/23/19	1415	Received by Laboratory:	5/23/19	1415

QSD-01 Revision 11/08/18

Appendix B - Revised Sediment Management Alternatives Analysis

INVESTIGATE
DESIGN
RESTORE

July 2, 2020

MEPA Office
Attn: Anne
100 Cambridge St., Suite 900
Boston, MA 02114

Re: EEA No. 16226 Becker Pond Dam Removal Project (Mt. Washington) Expanded Environmental Notification Form (EENF) and Request for Waiver of Mandatory Environmental Impact Report (EIR) – Supplemental Information

Dear Ms. Canady,

On behalf of the landowner and Proponent, The Nature Conservancy (TNC), and in partnership with the Massachusetts Division of Ecological Restoration (DER), Inter-Fluve is submitting the following supplemental information to the previously prepared EENF and request for waiver of the mandatory EIR for the Becker Pond Dam Removal Project (Project; EEA No. 16226).

Introduction

As part of the MEPA review process for the proposed project, a virtual site visit was held on June 22, 2020. The consultation session was attended by MEPA staff; the project Proponent; other project partners; federal, state, and local agency staff; and members of the public. A number of questions about the project were raised and answered during the call; however, it was recognized that two particular issues related to sediment management and access would be best addressed through the submission of supplemental information to the MEPA office. The purpose of this document is to expand upon the alternatives analysis submitted with the project EENF and provide more information about site access.

Revised Alternatives Analysis

As stated previously, this project will require numerous local, state, and federal approvals following MEPA review. All Federal Clean Water Act Section 401 activities are subject to an alternatives analysis as part of DEP's review process for the Water Quality Certification. Additionally, alterations to Riverfront Area and Bordering Vegetated Wetlands require the presentation of an alternatives analysis under the Massachusetts Wetlands Protection Act (WPA; Ch. 131, Section 40) and Regulations (Regulations; 310 CMR 10.00 et seq.). The intent of this revised analysis is to identify the full range of options for this Project, and the various issues and opportunities associated with each one. In the original EENF, the Proponent presented three (3) alternatives that represented logical potential approaches for the site. However, a fourth alternative, which was presented to the project team by DEP at a pre-application meeting in October 2019, was unintentionally omitted. The revised alternatives analysis includes this fourth alternative, along with the advantages and disadvantages associated with each.

- No-Action alternative (Alternative 1);
- Full dam removal with passive downstream sediment release (Alternative 2); and
- Full dam removal with full mobile sediment removal (Alternative 3); and
- Full dam removal with partial mobile sediment removal (Alternative 4; Preferred).

It should be noted that the preferred alternative has changed from Alternative 2 to Alternative 4. Given the sensitive receiving areas (i.e., Sages Ravine) located downstream of the site, it has become clear that additional care would be required to meet the WPA regulatory standards for ecological restoration projects, which require that all "practicable" measures be taken to "avoid" or "minimize" impacts (see 310 CMR 10.13(1)(d) and 10.24(a)(3)(d)3). Based on subsequent review and discussion of collected data and other known information, Alternative 4 was selected as the alternative which appears to best reduce the risk of downstream sedimentation and best meet the requirements of the WPA Regulations, while recognizing feasibility and cost limitations of the project as well. Further discussion of Alternative 4 is provided below.

The Proponent and project partners wish to emphasize that no sediment management approach can guarantee with one-hundred percent certainty that downstream sedimentation will not occur, particularly during construction and early in the restoration trajectory. Short-term impacts are expected in order to address the long-term ecological consequences caused by dams. In addition, sediment transport is a natural process. Its restoration is one of the ecological functions that benefit most from small dam removal projects like this one. Regardless of approach, storm events and other stochastic perturbations may mobilize impoundment sediments, even those that have been stabilized. Best management practices will be used to minimize risk throughout construction, and the Proponent has proposed to monitor sediment migration in order to better understand how sediment might move through this type of system. Details of the monitoring plan will be developed and refined based on agency input during the permitting process.

For the majority of dam removal projects undertaken in Massachusetts, the preferred sediment management alternative is not typically identified until review of the project under Section 401 of the Clean Water Act, which is a permit process administered by DEP. The project team will look to work collaboratively with DEP during the permitting process to identify the specifics of any selected approach.

Alternative 1: No-Action Alternative

The No-Action alternative in this case would eliminate the cost of dam removal and stream restoration and would allow project partners to focus their attention on other projects. This alternative would preserve the shallow impoundment environment which would continue to fill in with sediment over time. However, this No-Action alternative would continue to put potential visitors at risk due to the unsafe condition of the dam. This alternative would also continue the long history of passage constraints for aquatic organisms and continued deposition of sediment and organic material within the impoundment. Dam removal, stream restoration, and reduction in safety hazards are the primary goals of this proposed project; the No-Action alternative would not serve the project purpose.

Alternative 2: Full dam removal and passive downstream release of impounded sediment

This alternative includes the removal of the full vertical and lateral extent of the dam and restoration of the adjacent side slopes and channel in the footprint of the dam. With this alternative, approximately 550 cubic yards[1] of impounded sediment would be passively released downstream following dam removal. This sediment would supplement sediment-starved reaches of the stream and Schenob Brook, with finer-grained materials being mobilized well downstream. The stream at the dam would be expected to match the step-pool-riffle structure of the stream observed downstream. The concrete from the dam would be removed to an off-site facility to be recycled, and disturbed valley slopes would be stabilized with biodegradable fabric. Based on previous project experience, the organic nature of the sediments, and abundant seed sources from within the surrounding forest and upstream headwater wetlands, it is anticipated that the former impoundment would revegetate naturally, without need for seeding.

This alternative would result in the conversion of the shallow impoundment to a free-flowing stream with overbank floodplain and bordering wetland. Any time there is a significant change in habitat type, it's important to consider the potential impacts to the various species that utilize the site. Generally, the literature suggests that the restoration of natural ecological processes and associated benefits to native aquatic species though dam removal is expected to outweigh potential negative impacts[2]. Studies have demonstrated increased diversity of both aquatic and native species[3], among other benefits. For this project, removal of the dam and loss of the impoundment would result in improved connectivity allowing fish to utilize the entirety of the brook, from the headwaters to its confluence with Schenob Brook (noting that there may be some natural barriers to movement within Sages Ravine). Generalist, warm-water species (e.g., smallmouth bass) that often exist in dam impoundments (although it's unclear if that is the case here) will have less habitat area, while cold-water species (e.g., brook trout) would benefit from moderated stream temperatures and expansion of accessible habitat. As observed at other similar dam removal project sites in Massachusetts, most waterfowl, mammals, and herpetofauna (e.g., salamanders, turtles, snakes, etc.) would continue to utilize the former impoundment area, or move to other ponds and streams within the upper Becker Pond watershed and surrounding areas (e.g., Lee Pond Brook watershed). However, it is acknowledged that this change may negatively affect certain species dependent on open water systems (and associated habitat types) for all or a portion of their respective life histories. For example, those herpetofauna which have limited dispersal ranges (affecting their ability to find alternative habitat), and require open water for all or a portion of their lifecycle could be negatively affected. Consultation with the Massachusetts Natural Heritage and Endangered Species Program has confirmed that there are no known rare or endangered species with this life history in the impoundment area.

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[1] 550 cubic yards is considered the "mobile portion" of impounded sediment. This is the estimated sediment volume that would be mobilized through natural channel-forming processes shortly after dam removal. This amount represents approximately one-third of the estimated total sediment behind the dam (~1,500 cubic yards). Storm events or other stochastic perturbations may mobilize additional material over time.

[2] American Rivers. (2002). *The Ecology of Dam Removal*. Retrieved 7/1/20 from https://www.americanrivers.org/conservation-resource/ecology-dam-removal/

[3] Hill, M.J., E.A. Long, and S. Hardin. 1993. Effects of Dam Removal on Dead Lake, Chipola River, Florida. Apalachicola River Watershed Investigations, Florida Game and Fresh Water Fish Commission. A Wallop-Breaux Project F-39-R, 12 pp.

This alternative has the lowest associated implementation cost and would likely achieve the maximum ecological benefit of the dam removal. However, it would result in higher risk of sedimentation within Sages Ravine. As such, it has been removed from consideration as the preferred alternative.

Alternative 3: Full dam removal with full impounded sediment removal

Alternative 3 would provide the same level of dam removal as Alternative 2, but would also include mechanical removal of the total 1,500 cubic yards of impounded sediment and disposal in a landfill. The habitat and species use transitions would be identical to those of Alternative 2 with a conversion of the impoundment to a stream with bordering wetlands and floodplain.

The purpose of complete sediment removal would be to minimize potential impacts to downstream receiving areas such as Sages Ravine. Although this is a technically feasible option and would lower the risk of sedimentation downstream, it does not achieve the objective of pursuing an efficient and effective dam removal project that will minimize the construction impact outside of the dam footprint and keep implementation costs reasonable.

This alternative would require extensive water control to re-route the stream during construction and then excavate and haul out the sediment. In order to be safely transported, the sediment dewatering would require an extensive cleared and level space, thus increasing the area of impact in the Riverfront Area. The sediment would then need to be transferred to road-worthy dump trucks and hauled to a landfill. Off-site hauling would cause substantial wear and tear to the access road and on East Street, which is unpaved in the vicinity of the site. Finally, this alternative would also involve extensive seeding and revegetation of the former impoundment area with associated monitoring and maintenance. This additional work would substantially increase costs, and could make the project unappealing to potential funders and/or direct funding away from other projects.

Alternative 4 (Preferred): Full dam removal with partial impounded sediment removal

This alternative would provide the same level of dam removal as Alternatives 2 and 3 and would include mechanical removal of a portion of the 550 cubic yards of impounded sediment that has been determined to be the readily mobile portion[4] in order to create a pilot channel through the impoundment to facilitate channel formation. The excavated impounded sediment would be disposed of at an off-site landfill or (preferably) reused for shaping and grading on site. The benefit of this alternative would be reduced potential for temporary sediment impacts to downstream receiving areas relative to Alternative 2.

This approach, although technically feasible, would be challenging at this site and likely not prevent all sediment movement because the narrow valley bottom, irregular bedrock and boulder pre-dam surface would likely inhibit complete removal of sediment within the pilot channel. The nature (primarily sand and fines) and relatively shallow depth of impounded sediment also make this material easy to displace and mobilize. Extensive water control would be required to re-route the stream during construction and then excavate and haul out the sediment. The limits of disturbance would be substantially greater than the footprint of the excavated channel, and the activity would inevitably

---

[4] The exact volume and extent of channel excavation will be determined in consultation with the permitting agencies and will reflect a balance of controlling short term impacts in the most feasibility.

mobilize some sediment to benefit the downstream reaches. This Alternative would require a smaller area of active revegetation as compared to Alternative 3.

Similar to Alterative 3, sediment that could not be re-used on site would need to be dewatered, then transferred to road-worthy dump trucks and hauled to a landfill. Off-site hauling of material would cause substantial wear and tear on the access road and on East Street. The final details of the on-site placement in upland areas would need to be discussed with Natural Heritage and Endangered Species Program because the site and surrounding land is within a mapped Priority Habitat. This alternative would result in identical transition of wetland resource areas and habitat uses as described in Alternative 2.

This alternative would provide a reduced potential for sediment impacts to Sages Ravine while avoiding the cost of complete sediment removal (Alternative 3) and providing similar ecological benefit to Alternative 2. As such, this has been selected as the preferred alternative.

Access Road

As noted in the EENF, there is an existing access road extending from East Street to the dam site. Although the majority of this access road is on land controlled by the Proponent, the stretch closest to East Street is held by a private landowner (Parcel ID: Map 7, Lot 5), and the owner has not allowed access across the property. In order to address the site access needs of the project, the Proponent has proposed construction of a temporary access road from East Street to bypass the property (see 75% Design Plans). Temporary and permanent impacts from this access road construction are included in the EENF.

While attempts have been made to limit the amount of disturbance associated with the access, the road would have to be constructed through mature forest, and would increase project costs by up to $25,000. The Proponent's preference is to avoid these impacts and additional costs; therefore, the Proponent has been exploring options for working with the landowner. It is unclear at this time if or when an agreement might be reached; however, the Proponent is committed to exhausting all practicable options to avoid construction of the access road. If the new access road is constructed, it would be narrowed using revegetation techniques following construction and utilized as a permanent hiking trail.

Thank you for your time and consideration of this additional information.

Sincerely,

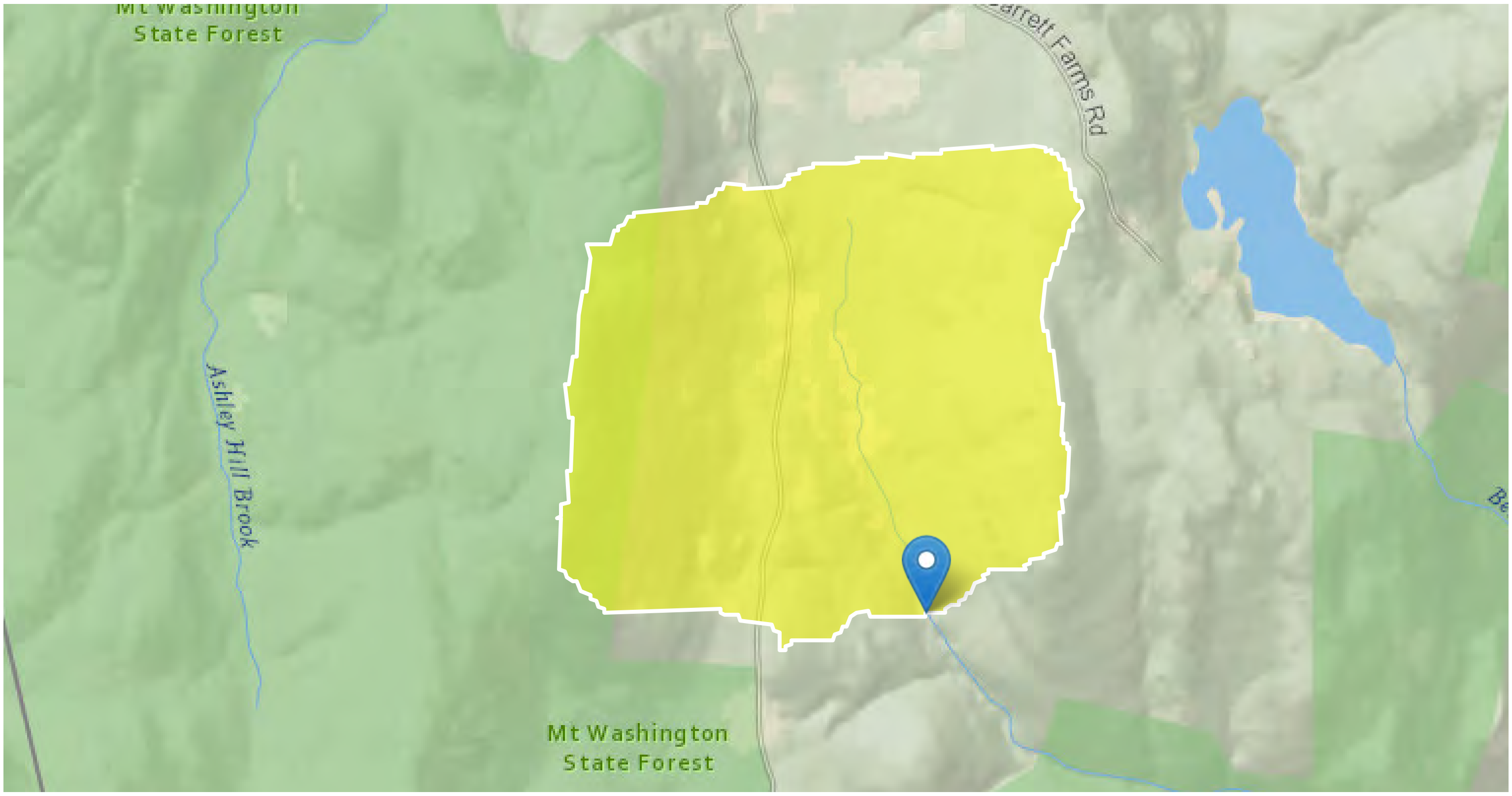
Candice Constantine

Candice Constantine, PhD, PE
617-909-7569
cconstantine@interfluve.com

Appendix C - StreamStats Summary

StreamStats Report

Region ID: MA
Workspace ID: MA20200518150849008000
Clicked Point (Latitude, Longitude): 42.05828, -73.45931
Time: 2020-05-18 11:09:04 -0400



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	1.05	square miles
BSLDEM250	Mean basin slope computed from 1:250K DEM	14.078	percent
DRFTPERSTR	Area of stratified drift per unit of stream length	0.04	square mile per mile
MAREGION	Region of Massachusetts 0 for Eastern 1 for Western	1	dimensionless
ELEV	Mean Basin Elevation	1840	feet
LC06STOR	Percentage of water bodies and wetlands determined from the NLCD 2006	7.64	percent
PCTSNDGRV	Percentage of land surface underlain by sand and gravel deposits	2.89	percent
FOREST	Percentage of area covered by forest	80.85	percent

Parameter Code	Parameter Description	Value	Unit
BSLDEM10M	Mean basin slope computed from 10 m DEM	17.475	percent
ACRSDFT	Area underlain by stratified drift	0.0308	square miles
CENTROIDX	Basin centroid horizontal (x) location in state plane coordinates	37483.8	meters
CENTROIDY	Basin centroid vertical (y) location in state plane units	870206.1	meters
CRSDFT	Percentage of area of coarse-grained stratified drift	2.89	percent
LAKEAREA	Percentage of Lakes and Ponds	0.13	percent
LC11DEV	Percentage of developed (urban) land from NLCD 2011 classes 21-24	1.79	percent
LC11IMP	Average percentage of impervious area determined from NLCD 2011 impervious dataset	0.0458	percent
MAXTEMPC	Mean annual maximum air temperature over basin area, in degrees Centigrade	11.7	feet per mi
OUTLETX	Basin outlet horizontal (x) location in state plane coordinates	37835	feet
OUTLETY	Basin outlet vertical (y) location in state plane coordinates	869405	feet
PRECPRIS00	Basin average mean annual precipitation for 1971 to 2000 from PRISM	54.3	inches
STRMTOT	total length of all mapped streams (1:24,000-scale) in the basin	0.77	miles
WETLAND	Percentage of Wetlands	5.72	percent

Low-Flow Statistics Parameters[Statewide Low Flow WRIR00 4135]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	1.05	square miles	1.61	149
BSLDEM250	Mean Basin Slope from 250K DEM	14.078	percent	0.32	24.6
DRFTPERSTR	Stratified Drift per Stream Length	0.04	square mile per mile	0	1.29
MAREGION	Massachusetts Region	1	dimensionless	0	1

Low-Flow Statistics Disclaimers[Statewide Low Flow WRIR00 4135]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors

Low-Flow Statistics Flow Report[Statewide Low Flow WRIR00 4135]

Statistic	Value	Unit
7 Day 2 Year Low Flow	0.11	ft^3/s
7 Day 10 Year Low Flow	0.059	ft^3/s

Low-Flow Statistics Citations

Ries, K.G., III,2000, Methods for estimating low-flow statistics for Massachusetts streams: U.S. Geological Survey Water Resources Investigations Report 00-4135, 81 p. (http://pubs.usgs.gov/wri/wri004135/)

Peak-Flow Statistics Parameters[Peak Statewide 2016 5156]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	1.05	square miles	0.16	512
ELEV	Mean Basin Elevation	1840	feet	80.6	1948
LC06STOR	Percent Storage from NLCD2006	7.64	percent	0	32.3

Peak-Flow Statistics Flow Report[Peak Statewide 2016 5156]

PII: Prediction Interval-Lower, PIu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	PII	PIu	SEp
2 Year Peak Flood	77.9	ft^3/s	35.4	172	42.3
5 Year Peak Flood	138	ft^3/s	61.6	311	43.4
10 Year Peak Flood	191	ft^3/s	82.7	443	44.7
25 Year Peak Flood	274	ft^3/s	113	662	47.1
50 Year Peak Flood	345	ft^3/s	137	870	49.4
100 Year Peak Flood	425	ft^3/s	162	1110	51.8
200 Year Peak Flood	514	ft^3/s	189	1400	54.1
500 Year Peak Flood	648	ft^3/s	224	1870	57.6

Peak-Flow Statistics Citations

Zarriello, P.J.,2017, Magnitude of flood flows at selected annual exceedance probabilities for streams in Massachusetts: U.S. Geological Survey Scientific Investigations Report 2016–5156, 99 p. (https://dx.doi.org/10.3133/sir20165156)

August Flow-Duration Statistics Parameters[Statewide Low Flow WRIR00 4135]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	1.05	square miles	1.61	149
BSLDEM250	Mean Basin Slope from 250K DEM	14.078	percent	0.32	24.6
DRFTPERSTR	Stratified Drift per Stream Length	0.04	square mile per mile	0	1.29
MAREGION	Massachusetts Region	1	dimensionless	0	1

August Flow-Duration Statistics Disclaimers[Statewide Low Flow WRIR00 4135]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors

August Flow-Duration Statistics Flow Report[Statewide Low Flow WRIR00 4135]

Statistic	Value	Unit
August 50 Percent Duration	0.252	ft^3/s

August Flow-Duration Statistics Citations

Ries, K.G., III,2000, Methods for estimating low-flow statistics for Massachusetts streams: U.S. Geological Survey Water Resources Investigations Report 00-4135, 81 p. (http://pubs.usgs.gov/wri/wri004135/)

Flow-Duration Statistics Parameters[Statewide Low Flow WRIR00 4135]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	1.05	square miles	1.61	149
DRFTPERSTR	Stratified Drift per Stream Length	0.04	square mile per mile	0	1.29
MAREGION	Massachusetts Region	1	dimensionless	0	1
BSLDEM250	Mean Basin Slope from 250K DEM	14.078	percent	0.32	24.6

Flow-Duration Statistics Disclaimers[Statewide Low Flow WRIR00 4135]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors

Flow-Duration Statistics Flow Report[Statewide Low Flow WRIR00 4135]

Statistic	Value	Unit

Statistic	**Value**	**Unit**
50 Percent Duration	1	ft^3/s
60 Percent Duration	0.631	ft^3/s
70 Percent Duration	0.419	ft^3/s
75 Percent Duration	0.33	ft^3/s
80 Percent Duration	0.316	ft^3/s
85 Percent Duration	0.251	ft^3/s
90 Percent Duration	0.206	ft^3/s
95 Percent Duration	0.131	ft^3/s
98 Percent Duration	0.0849	ft^3/s
99 Percent Duration	0.0613	ft^3/s

Flow-Duration Statistics Citations

Ries, K.G., III,2000, Methods for estimating low-flow statistics for Massachusetts streams: U.S. Geological Survey Water Resources Investigations Report 00-4135, 81 p. (http://pubs.usgs.gov/wri/wri004135/)

Probability Statistics Parameters[Perennial Flow Probability]

Parameter Code	**Parameter Name**	**Value**	**Units**	**Min Limit**	**Max Limit**
DRNAREA	Drainage Area	1.05	square miles	0.01	1.99
PCTSNDGRV	Percent Underlain By Sand And Gravel	2.89	percent	0	100
FOREST	Percent Forest	80.85	percent	0	100
MAREGION	Massachusetts Region	1	dimensionless	0	1

Probability Statistics Flow Report[Perennial Flow Probability]

PIl: Prediction Interval-Lower, PIu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	**Value**	**Unit**	**PC**
Probability Stream Flowing Perennially	0.853	dim	71

Probability Statistics Citations

Bent, G.C., and Steeves, P.A.,2006, A revised logistic regression equation and an automated procedure for mapping the probability of a stream flowing perennially in Massachusetts: U.S. Geological Survey Scientific Investigations Report 2006–5031, 107 p. (http://pubs.usgs.gov/sir/2006/5031/pdfs/SIR_2006-5031rev.pdf)

Bankfull Statistics Parameters[Bankfull Statewide SIR2013 5155]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	1.05	square miles	0.6	329
BSLDEM10M	Mean Basin Slope from 10m DEM	17.475	percent	2.2	23.9

Bankfull Statistics Flow Report[Bankfull Statewide SIR2013 5155]

PIl: Prediction Interval-Lower, PIu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	SEp
Bankfull Width	17.9	ft	21.3
Bankfull Depth	1.09	ft	19.8
Bankfull Area	19.3	ft^2	29
Bankfull Streamflow	76.6	ft^3/s	55

Bankfull Statistics Citations

Bent, G.C., and Waite, A.M.,2013, Equations for estimating bankfull channel geometry and discharge for streams in Massachusetts: U.S. Geological Survey Scientific Investigations Report 2013–5155, 62 p., (http://pubs.usgs.gov/sir/2013/5155/)

USGS Data Disclaimer: Unless otherwise stated, all data, metadata and related materials are considered to satisfy the quality standards relative to the purpose for which the data were collected. Although these data and associated metadata have been reviewed for accuracy and completeness and approved for release by the U.S. Geological Survey (USGS), no warranty expressed or implied is made regarding the display or utility of the data for other purposes, nor on all computer systems, nor shall the act of distribution constitute any such warranty.

USGS Software Disclaimer: This software has been approved for release by the U.S. Geological Survey (USGS). Although the software has been subjected to rigorous review, the USGS reserves the right to update the software as needed pursuant to further analysis and review. No warranty, expressed or implied, is made by the USGS or the U.S. Government as to the functionality of the software and related material nor shall the fact of release constitute any such warranty. Furthermore, the software is released on condition that neither the USGS nor the U.S. Government shall be held liable for any damages resulting from its authorized or unauthorized use.

USGS Product Names Disclaimer: Any use of trade, firm, or product names is for descriptive purposes only and does not imply endorsement by the U.S. Government.

Application Version: 4.3.11

Appendix D - Wetland Forms

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Becker Pond Access City/County: Mt. Washington/Berkshire Sampling Date: May 9, 2020

Applicant/Owner: The Nature Conservancy State: MA Sampling Point: A1

Investigator(s): Nick Nelson, Sarah Klionsky Section, Township, Range: NA

Landform (hillslope, terrace, etc.): flat area along hillslope Local relief (concave, convex, none): concave Slope (%): 0

Subregion (LRR or MLRA): ______ Lat: 42.060372 Long: -73.466085 Datum: WGS 84

Soil Map Unit Name: Taconic-Macomber association NWI classification: None indicated

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, or Hydrology ☒ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ☐ No ☒

Hydric Soil Present? Yes ☐ No ☒

Wetland Hydrology Present? Yes ☒ No ☐

Is the Sampled Area within a Wetland? **Yes** ☐ **No** ☒

If yes, optional Wetland Site ID: ______

Remarks: (Explain alternative procedures here or in a separate report.)

Community type: Upland forest

Spring has been colder than usual, snow flurries on day of delineation. Appears that area has been impacted by road runoff.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☒ Surface Water (A1)
- ☒ High Water Table (A2)
- ☒ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☒ Sparsely Vegetated Concave Surface (B8)
- ☒ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ☒ No ☐ Depth (inches): 0.5ft

Water Table Present? Yes ☒ No ☐ Depth (inches): surface

Saturation Present? (includes capillary fringe) Yes ☒ No ☐ Depth (inches): surface

Wetland Hydrology Present? Yes ☒ **No** ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Standing water in low areas with saturated soils.

VEGETATION – Use scientific names of plants.

Sampling Point: A1

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. Quercus rubra (15)	95	Y	FACU
2. Fagus grandifolia (1)	5	N	FACU
3.			
4.			
5.			
6.			
7.			
	100	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15)			
1. Kalmia latifolia	1	Y	FACU
2. Pinus strobus	<1	N	FACU
3. Spirea sp	<1	N	
4.			
5.			
6.			
7.			
	1.5	= Total Cover	

Herb Stratum (Plot size: 5)			
1. Sphagnum moss sp	10	Y	FACW
2. Carex sp	<1	N	
3. Solidago sp	<1	N	
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	10.5	= Total Cover	

Woody Vine Stratum (Plot size:)			
1.			
2.			
3.			
4.			
		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species	10	x 2 = 20
FAC species		x 3 =
FACU species	102	x 4 = 408
UPL species		x 5 =
Column Totals:	112 (A)	428 (B)

Prevalence Index = B/A = 3.8

Hydrophytic Vegetation Indicators:

- ☐ Rapid Test for Hydrophytic Vegetation
- ☐ Dominance Test is >50%
- ☐ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ☐ **No** ☒

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: A1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-4	5YR 2.5/1	100					Silty loamy	roots intermixed
4-6	10YR 5/8	90					sandy/gravely	gravel mixed with sand and fine silt

[1] Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2] Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ☐ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ☐ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ☐ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ☐ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ☐ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ☐ Dark Surface (S7) (**LRR K, L**)
- ☐ Polyvalue Below Surface (S8) (**LRR K, L**)
- ☐ Thin Dark Surface (S9) (**LRR K, L**)
- ☐ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ☐ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ☐ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:

Depth (inches):

Hydric Soil Present? **Yes** ☐ **No** ☒

Remarks:

Sand and gravel found within half a foot of the ground surface. Could not dig below 6 inches due to stony substrate.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Becker Pond Access City/County: Mt. Washington/Berkshire Sampling Date: May 9, 2020
Applicant/Owner: The Nature Conservancy State: MA Sampling Point: A1
Investigator(s): Nick Nelson, Sarah Klionsky Section, Township, Range: NA
Landform (hillslope, terrace, etc.): flat area along hillslope Local relief (concave, convex, none): concave Slope (%): 0
Subregion (LRR or MLRA): Lat: 42.060372 Long: -73.466085 Datum: WGS 84
Soil Map Unit Name: Taconic-Macomber association NWI classification: None indicated
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
Are Vegetation ☐, Soil ☐, or Hydrology ☒ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ☐ No ☒
Hydric Soil Present? Yes ☐ No ☒
Wetland Hydrology Present? Yes ☒ No ☐

Is the Sampled Area within a Wetland? **Yes** ☐ **No** ☒
If yes, optional Wetland Site ID:

Remarks: (Explain alternative procedures here or in a separate report.)
Community type: Upland forest

Spring has been colder than usual, snow flurries on day of delineation. Appears that area has been impacted by road runoff.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☒ Surface Water (A1)
- ☒ High Water Table (A2)
- ☒ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☒ Sparsely Vegetated Concave Surface (B8)
- ☒ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ☒ No ☐ Depth (inches): 0.5ft
Water Table Present? Yes ☒ No ☐ Depth (inches): surface
Saturation Present? (includes capillary fringe) Yes ☒ No ☐ Depth (inches): surface

Wetland Hydrology Present? **Yes** ☒ **No** ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Standing water in low areas with saturated soils.

VEGETATION – Use scientific names of plants.

Sampling Point: A1

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. Quercus rubra (15)	95	Y	FACU
2. Fagus grandifolia (1)	5	N	FACU
3.			
4.			
5.			
6.			
7.			
	100	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15)			
1. Kalmia latifolia	1	Y	FACU
2. Pinus strobus	<1	N	FACU
3. Spirea sp	<1	N	
4.			
5.			
6.			
7.			
	1.5	= Total Cover	

Herb Stratum (Plot size: 5)			
1. Sphagnum moss sp	10	Y	FACW
2. Carex sp	<1	N	
3. Solidago sp	<1	N	
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	10.5	= Total Cover	

Woody Vine Stratum (Plot size:)			
1.			
2.			
3.			
4.			
		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species	10	x 2 =	20
FAC species		x 3 =	
FACU species	102	x 4 =	408
UPL species		x 5 =	
Column Totals:	112 (A)		428 (B)

Prevalence Index = B/A = 3.8

Hydrophytic Vegetation Indicators:

- ☐ Rapid Test for Hydrophytic Vegetation
- ☐ Dominance Test is >50%
- ☐ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

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Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ☐ **No** ☒

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL Sampling Point: A1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features				Texture	Remarks
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]		
0-4	5YR 2.5/1	100					Silty loamy	roots intermixed
4-6	10YR 5/8	90					sandy/gravely	gravel mixed with sand and fine silt

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

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- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ☐ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ☐ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ☐ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ☐ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ☐ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ☐ Dark Surface (S7) (**LRR K, L**)
- ☐ Polyvalue Below Surface (S8) (**LRR K, L**)
- ☐ Thin Dark Surface (S9) (**LRR K, L**)
- ☐ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ☐ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ☐ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:

Depth (inches):

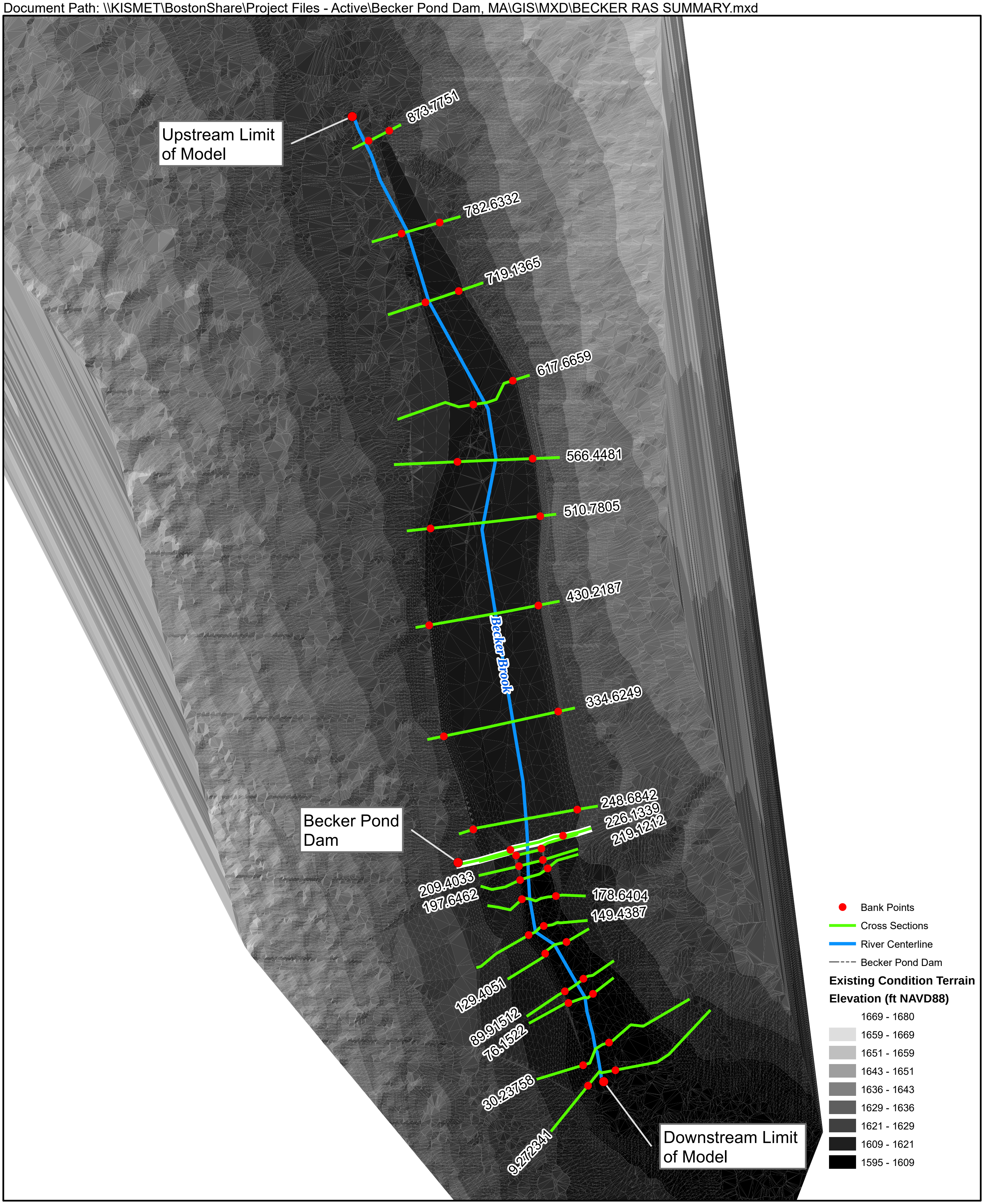
Hydric Soil Present? Yes ☐ **No** ☒

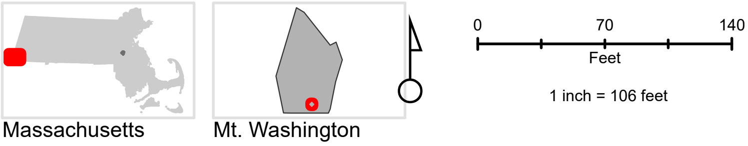
Remarks:

Sand and gravel found within half a foot of the ground surface. Could not dig below 6 inches due to stony substrate.

Appendix E - Hydraulic Modeling Summary

Document Path: \\KISMET\BostonShare\Project Files - Active\Becker Pond Dam, MA\GIS\MXD\BECKER RAS SUMMARY.mxd





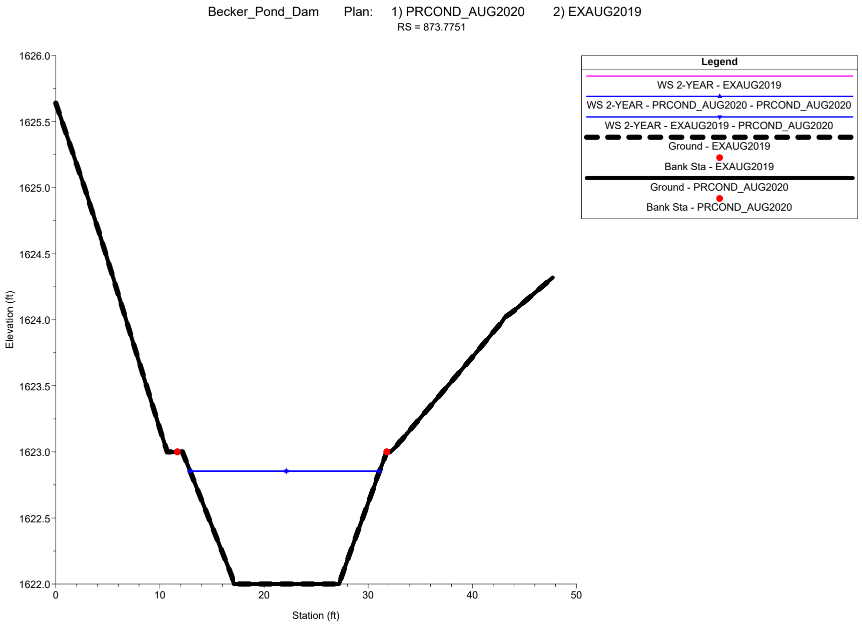
5/22/2020

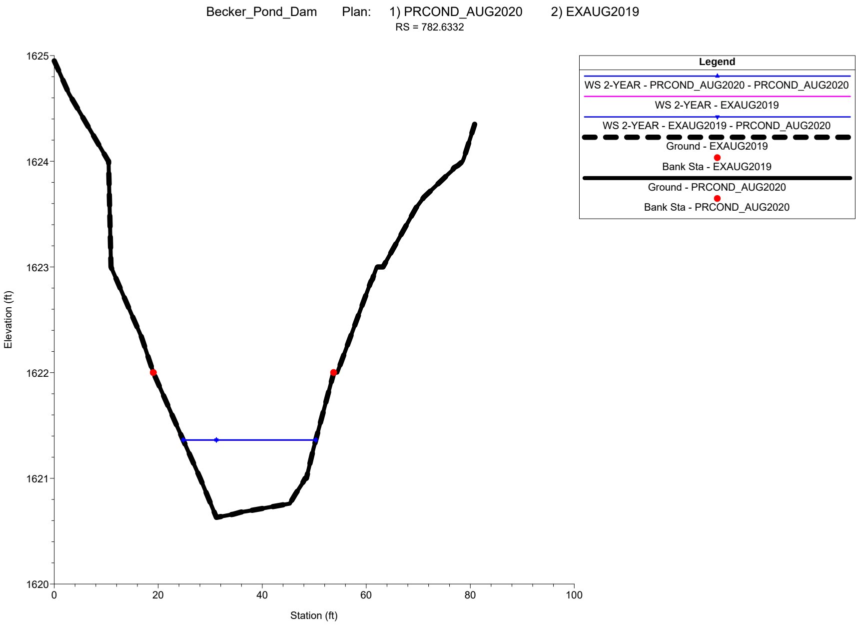
Hydraulic Model Overview

Becker Pond Dam

Mount Washington, Massachusetts

inter·fluve


Becker_Pond_Dam Plan: 1) PRCOND_AUG2020 2) EXAUG2019
RS = 873.7751
Legend
WS 2-YEAR - EXAUG2019
WS 2-YEAR - PRCOND_AUG2020 - PRCOND_AUG2020
WS 2-YEAR - EXAUG2019 - PRCOND_AUG2020
Ground - EXAUG2019
Bank Sta - EXAUG2019
Ground - PRCOND_AUG2020
Bank Sta - PRCOND_AUG2020
Elevation (ft)
1626.0
1625.5
1625.0
1624.5
1624.0
1623.5
1623.0
1622.5
1622.0
Station (ft)
0
10
20
30
40
50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Legend
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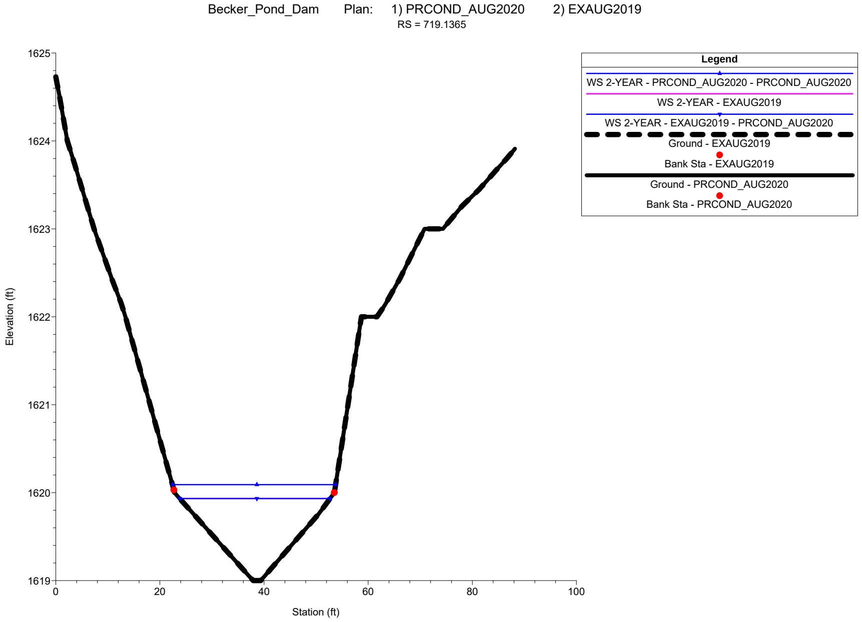
WS 2-YEAR - EXAUG2019
WS 2-YEAR - EXAUG2019 - PRCOND_AUG2020
Ground - EXAUG2019
Bank Sta - EXAUG2019
Ground - PRCOND_AUG2020
Bank Sta - PRCOND_AUG2020
Elevation (ft)
1625
1624
1623
1622
1621
1620
Station (ft)
0
20
40
60
80
100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RS = 719.1365
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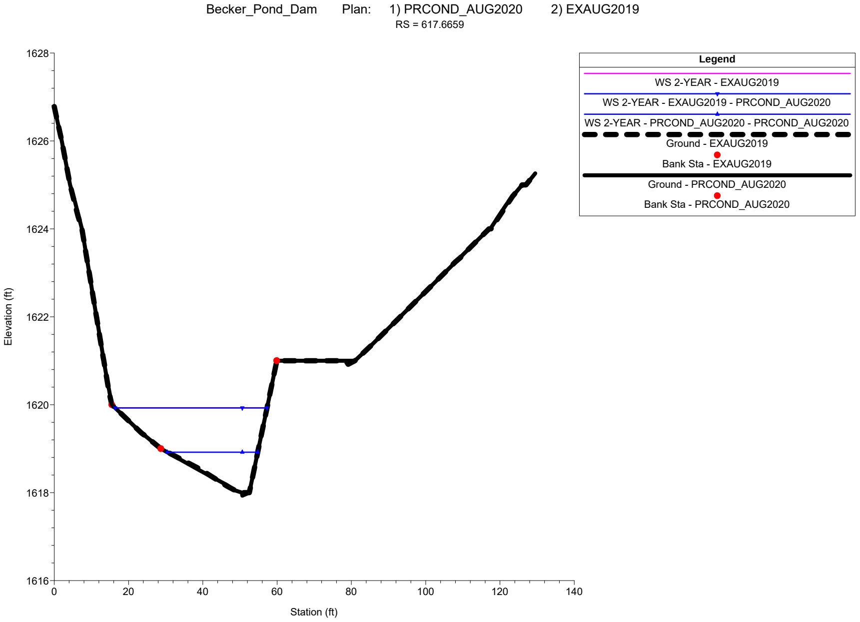
WS 2-YEAR - EXAUG2019
WS 2-YEAR - EXAUG2019 - PRCOND_AUG2020
Ground - EXAUG2019
Bank Sta - EXAUG2019
Ground - PRCOND_AUG2020
Bank Sta - PRCOND_AUG2020
Elevation (ft)
1625
1624
1623
1622
1621
1620
1619
Station (ft)
0
20
40
60
80
100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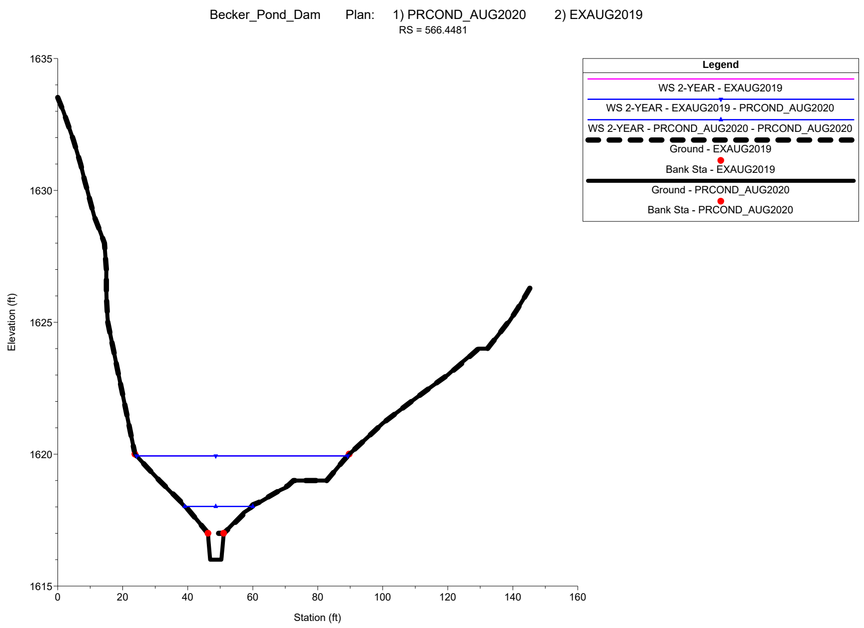
RS = 617.6659
Legend
WS 2-YEAR - EXAUG2019
WS 2-YEAR - EXAUG2019 - PRCOND_AUG2020
WS 2-YEAR - PRCOND_AUG2020 - PRCOND_AUG2020
Ground - EXAUG2019
Bank Sta - EXAUG2019
Ground - PRCOND_AUG2020
Bank Sta - PRCOND_AUG2020
Elevation (ft)
1628
1626
1624
1622
1620
1618
1616
Station (ft)
0
20
40
60
80
100
120
140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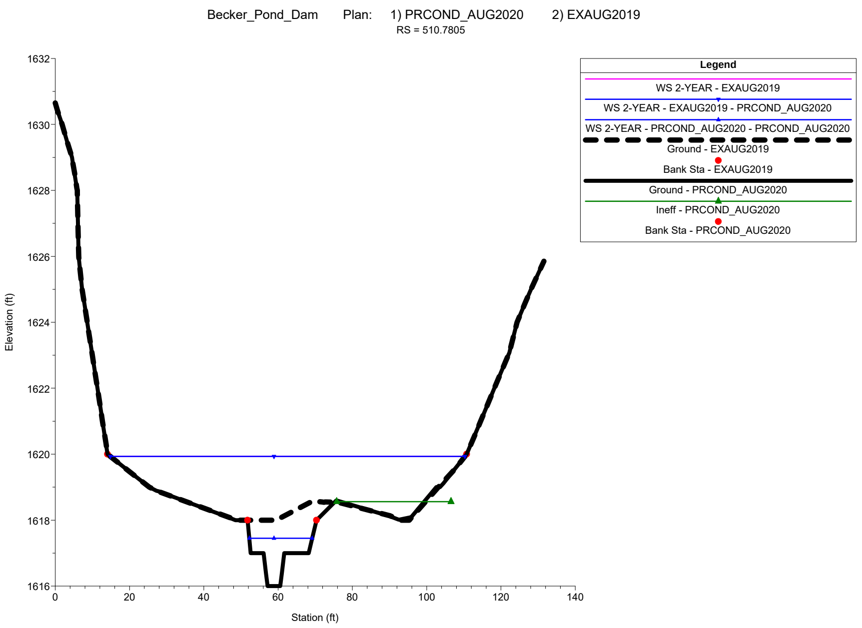
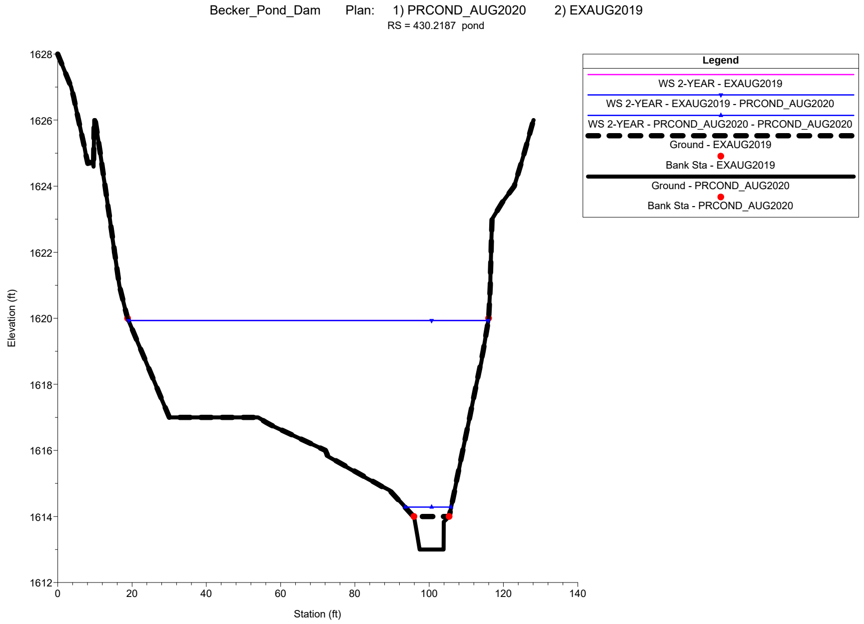
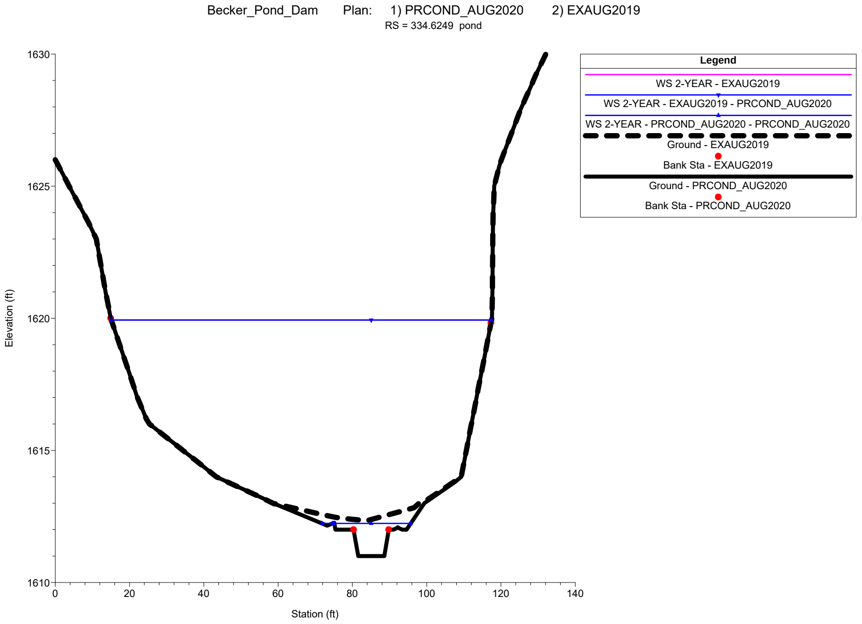
RS = 566.4481
Legend
WS 2-YEAR - EXAUG2019
WS 2-YEAR - EXAUG2019 - PRCOND_AUG2020
WS 2-YEAR - PRCOND_AUG2020 - PRCOND_AUG2020
Ground - EXAUG2019
Bank Sta - EXAUG2019
Ground - PRCOND_AUG2020
Bank Sta - PRCOND_AUG2020
Elevation (ft)
1635
1630
1625
1620
1615
Station (ft)
0
20
40
60
80
100
120
140
160

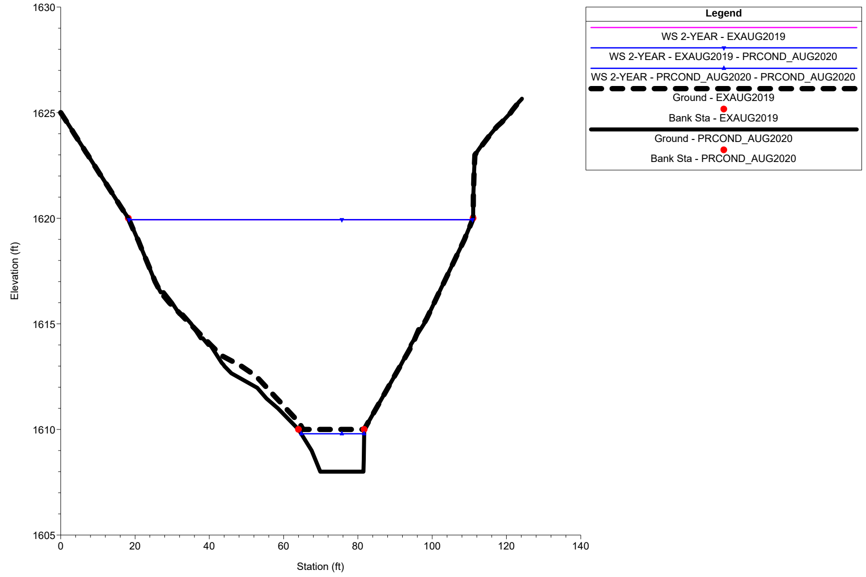

Becker_Pond_Dam Plan: 1) PRCOND_AUG2020 2) EXAUG2019
RS = 510.7805
Legend
WS 2-YEAR - EXAUG2019
WS 2-YEAR - EXAUG2019 - PRCOND_AUG2020
WS 2-YEAR - PRCOND_AUG2020 - PRCOND_AUG2020
Ground - EXAUG2019
Bank Sta - EXAUG2019
Ground - PRCOND_AUG2020
Ineff - PRCOND_AUG2020
Bank Sta - PRCOND_AUG2020
Elevation (ft)
1632
1630
1628
1626
1624
1622
1620
1618
1616
Station (ft)
0
20
40
60
80
100
120
140


Becker_Pond_Dam Plan: 1) PRCOND_AUG2020 2) EXAUG2019
RS = 430.2187 pond
Legend
WS 2-YEAR - EXAUG2019
WS 2-YEAR - EXAUG2019 - PRCOND_AUG2020
WS 2-YEAR - PRCOND_AUG2020 - PRCOND_AUG2020
Ground - EXAUG2019
Bank Sta - EXAUG2019
Ground - PRCOND_AUG2020
Bank Sta - PRCOND_AUG2020
Elevation (ft)
1628
1626
1624
1622
1620
1618
1616
1614
1612
Station (ft)
0
20
40
60
80
100
120
140


Becker_Pond_Dam Plan: 1) PRCOND_AUG2020 2) EXAUG2019
RS = 334.6249 pond
Legend
WS 2-YEAR - EXAUG2019
WS 2-YEAR - EXAUG2019 - PRCOND_AUG2020
WS 2-YEAR - PRCOND_AUG2020 - PRCOND_AUG2020
Ground - EXAUG2019
Bank Sta - EXAUG2019
Ground - PRCOND_AUG2020
Bank Sta - PRCOND_AUG2020
Elevation (ft)
1630
1625
1620
1615
1610
Station (ft)
0
20
40
60
80
100
120
140

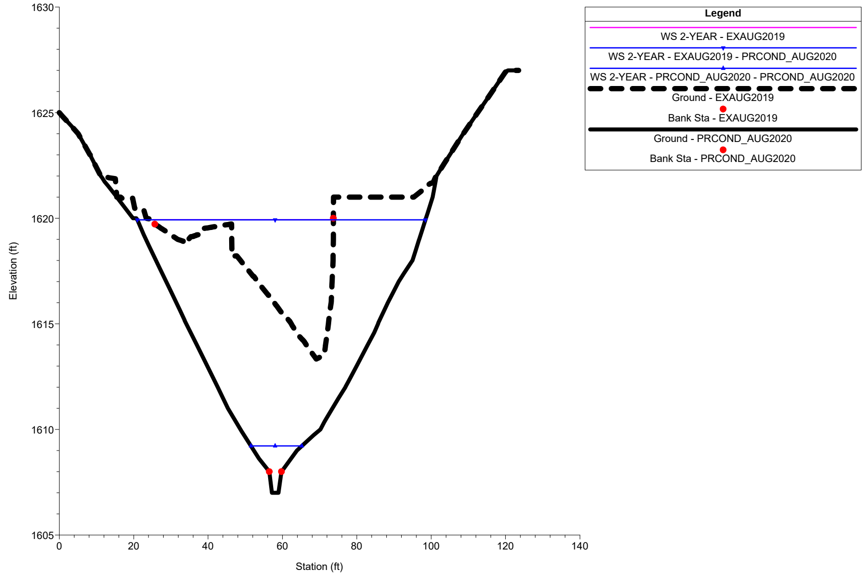
Becker_Pond_Dam Plan: 1) PRCOND_AUG2020 2) EXAUG2019

RS = 248.6842 pond



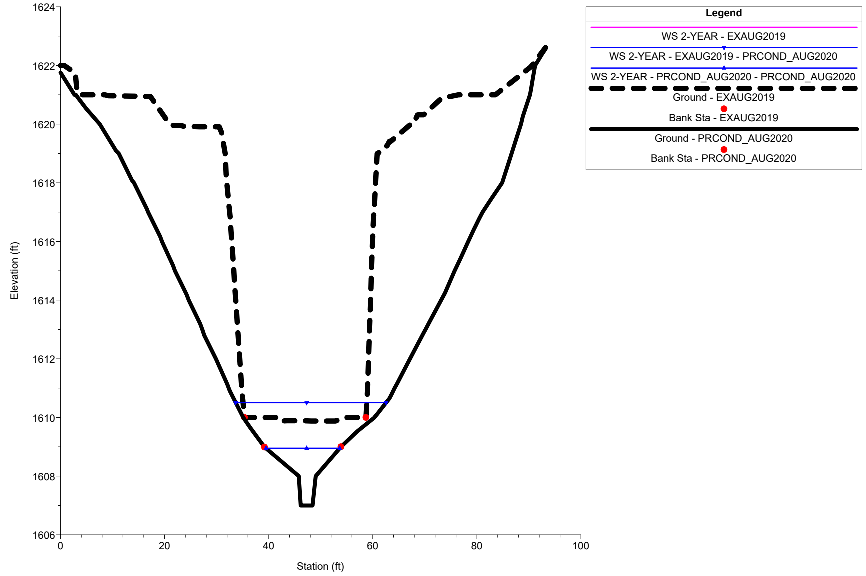
Becker_Pond_Dam Plan: 1) PRCOND_AUG2020 2) EXAUG2019

RS = 226.1339 upstream of dam including deep area by gate



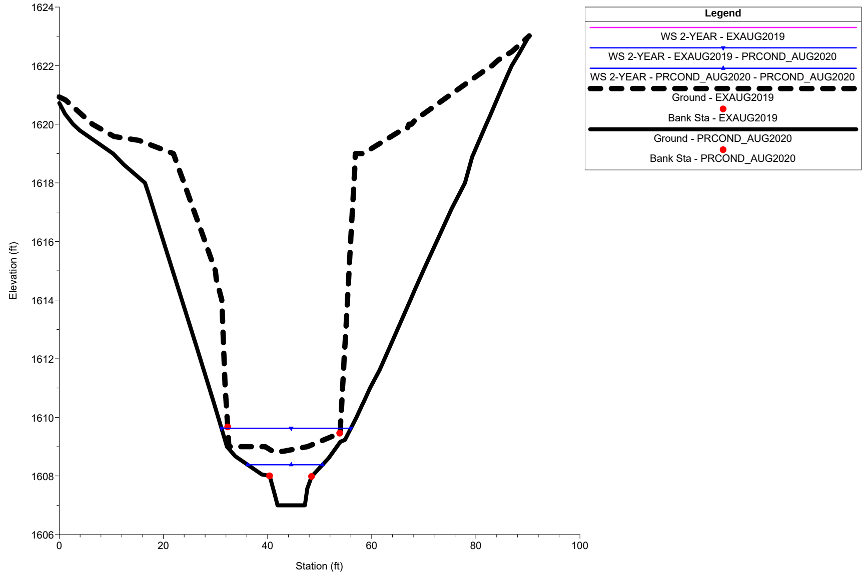
Becker_Pond_Dam Plan: 1) PRCOND_AUG2020 2) EXAUG2019

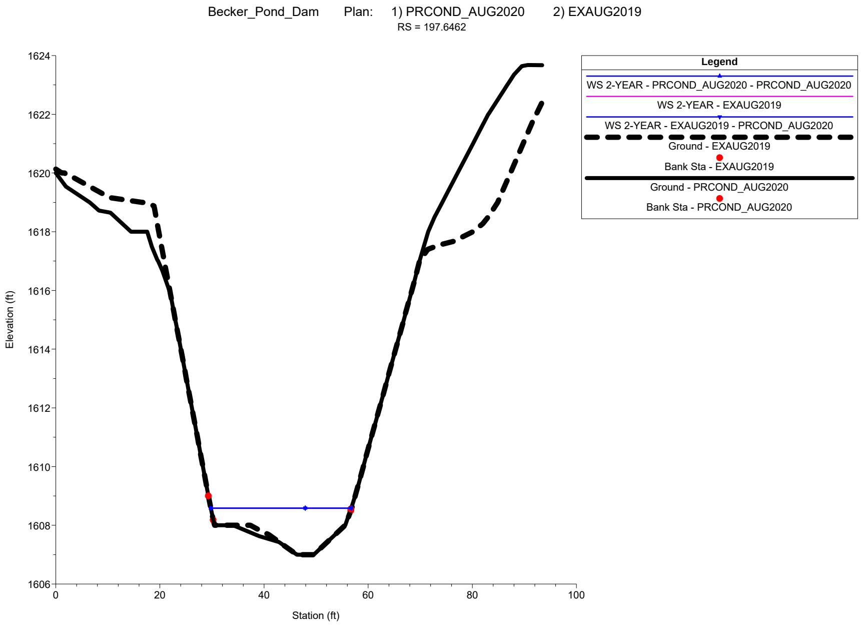
RS = 219.1212 upstream limit of concrete apron

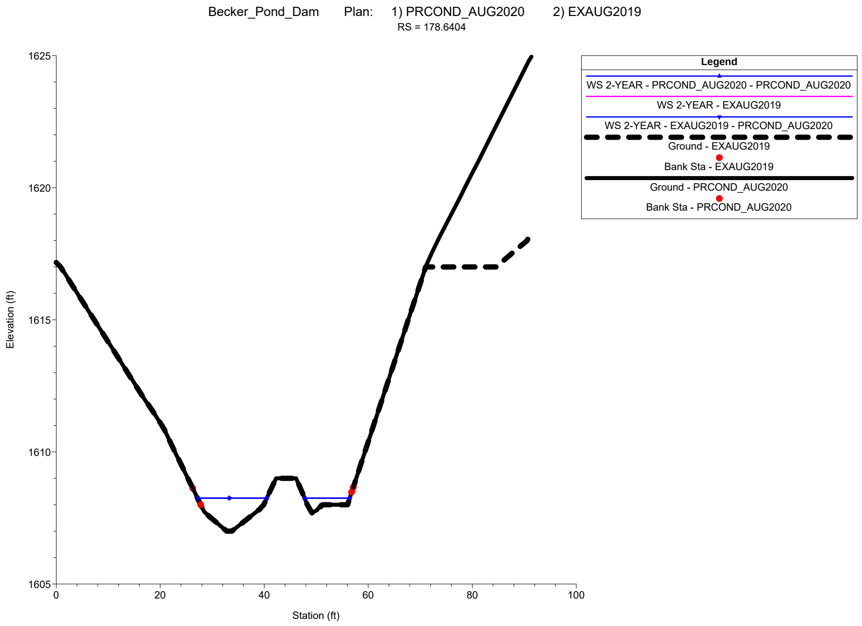


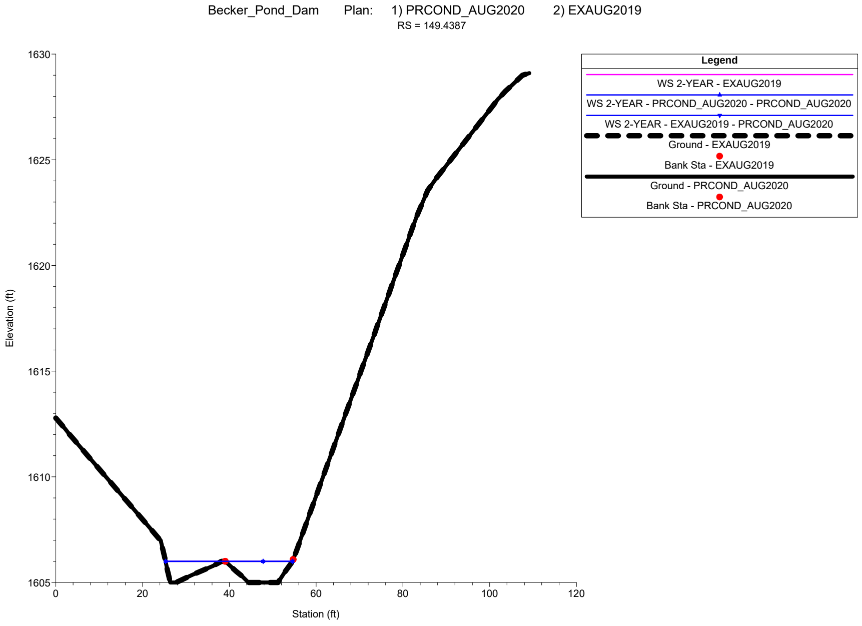
Becker_Pond_Dam Plan: 1) PRCOND_AUG2020 2) EXAUG2019

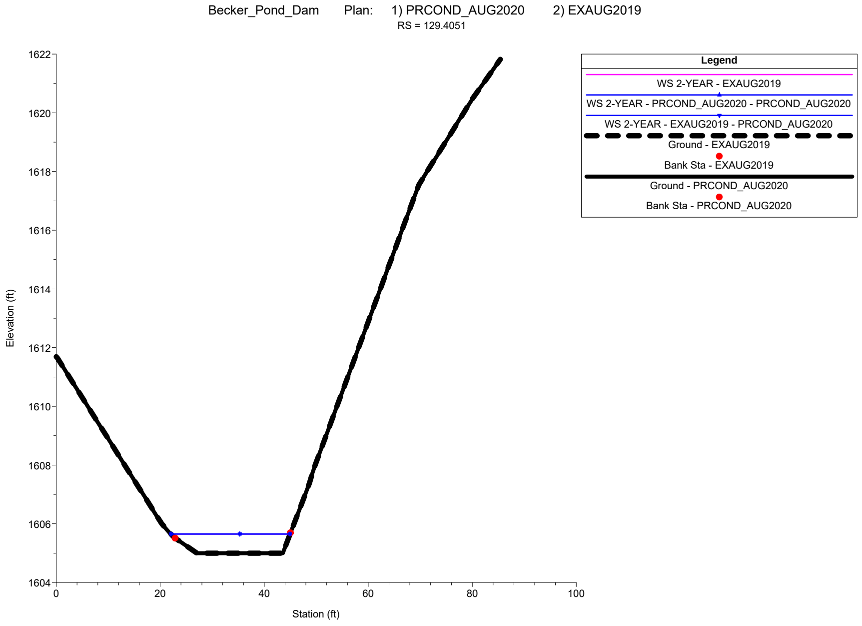
RS = 209.4033 Downstream limit of concrete apron



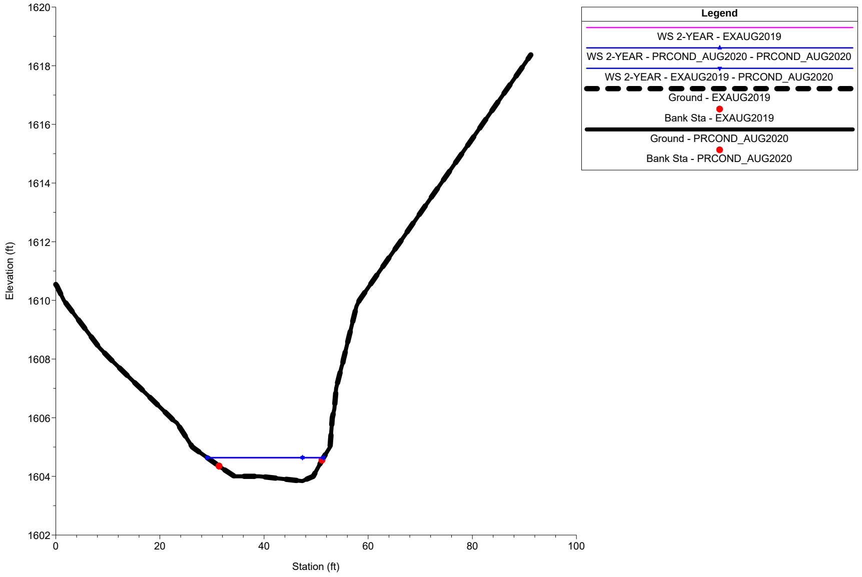

Becker_Pond_Dam Plan: 1) PRCOND_AUG2020 2) EXAUG2019
RS = 197.6462
Legend
WS 2-YEAR - PRCOND_AUG2020 - PRCOND_AUG2020
WS 2-YEAR - EXAUG2019
WS 2-YEAR - EXAUG2019 - PRCOND_AUG2020
Ground - EXAUG2019
Bank Sta - EXAUG2019
Ground - PRCOND_AUG2020
Bank Sta - PRCOND_AUG2020
Elevation (ft)
1624
1622
1620
1618
1616
1614
1612
1610
1608
1606
Station (ft)
0
20
40
60
80
100


Becker_Pond_Dam Plan: 1) PRCOND_AUG2020 2) EXAUG2019
RS = 178.6404
Legend
WS 2-YEAR - PRCOND_AUG2020 - PRCOND_AUG2020
WS 2-YEAR - EXAUG2019
WS 2-YEAR - EXAUG2019 - PRCOND_AUG2020
Ground - EXAUG2019
Bank Sta - EXAUG2019
Ground - PRCOND_AUG2020
Bank Sta - PRCOND_AUG2020
Elevation (ft)
1625
1620
1615
1610
1605
Station (ft)
0
20
40
60
80
100

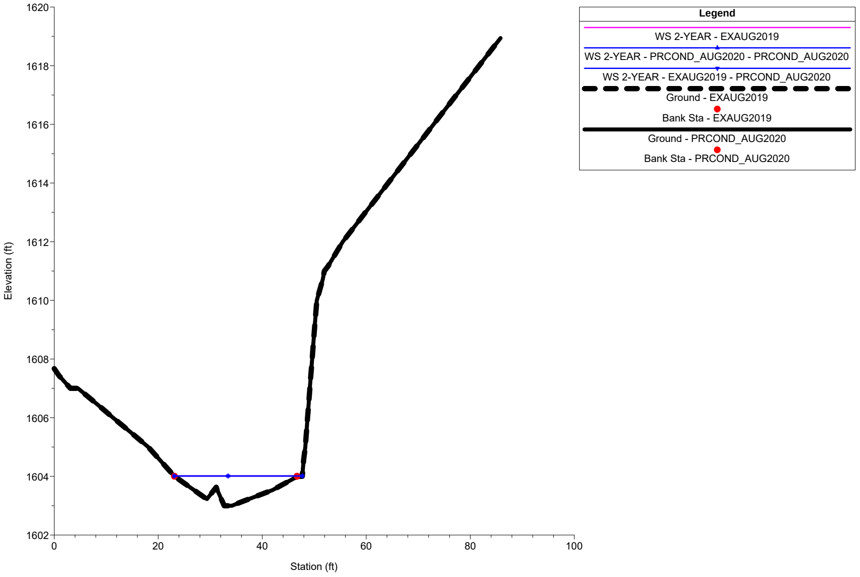

Becker_Pond_Dam Plan: 1) PRCOND_AUG2020 2) EXAUG2019
RS = 149.4387
Legend
WS 2-YEAR - EXAUG2019
WS 2-YEAR - PRCOND_AUG2020 - PRCOND_AUG2020
WS 2-YEAR - EXAUG2019 - PRCOND_AUG2020
Ground - EXAUG2019
Bank Sta - EXAUG2019
Ground - PRCOND_AUG2020
Bank Sta - PRCOND_AUG2020
Elevation (ft)
1630
1625
1620
1615
1610
1605
Station (ft)
0
20
40
60
80
100
120


Becker_Pond_Dam Plan: 1) PRCOND_AUG2020 2) EXAUG2019
RS = 129.4051
Legend
WS 2-YEAR - EXAUG2019
WS 2-YEAR - PRCOND_AUG2020 - PRCOND_AUG2020
WS 2-YEAR - EXAUG2019 - PRCOND_AUG2020
Ground - EXAUG2019
Bank Sta - EXAUG2019
Ground - PRCOND_AUG2020
Bank Sta - PRCOND_AUG2020
Elevation (ft)
1622
1620
1618
1616
1614
1612
1610
1608
1606
1604
Station (ft)
0
20
40
60
80
100

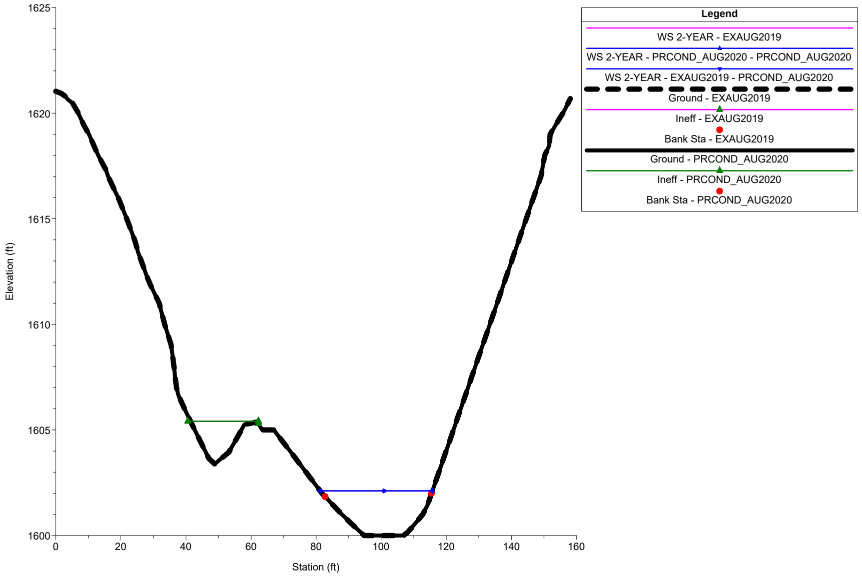
Becker_Pond_Dam Plan: 1) PRCOND_AUG2020 2) EXAUG2019
RS = 89.91512



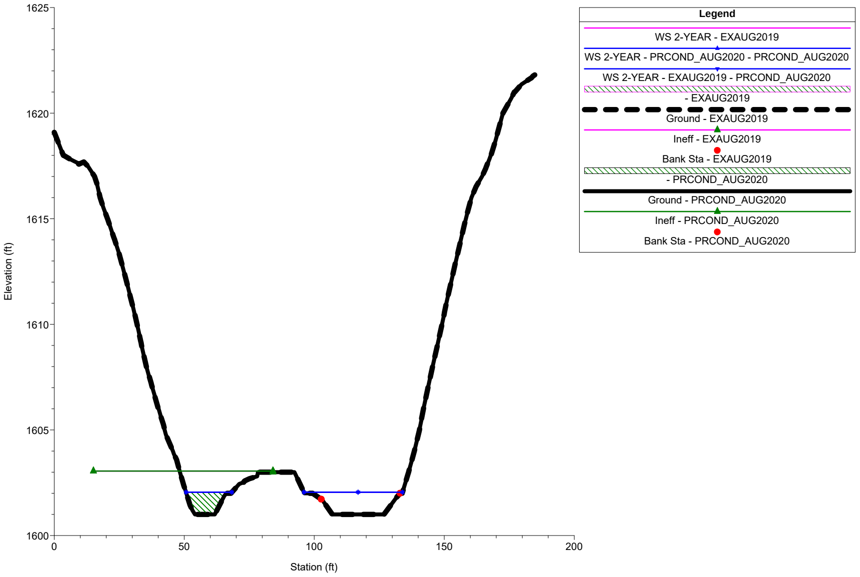
Becker_Pond_Dam Plan: 1) PRCOND_AUG2020 2) EXAUG2019
RS = 76.1522



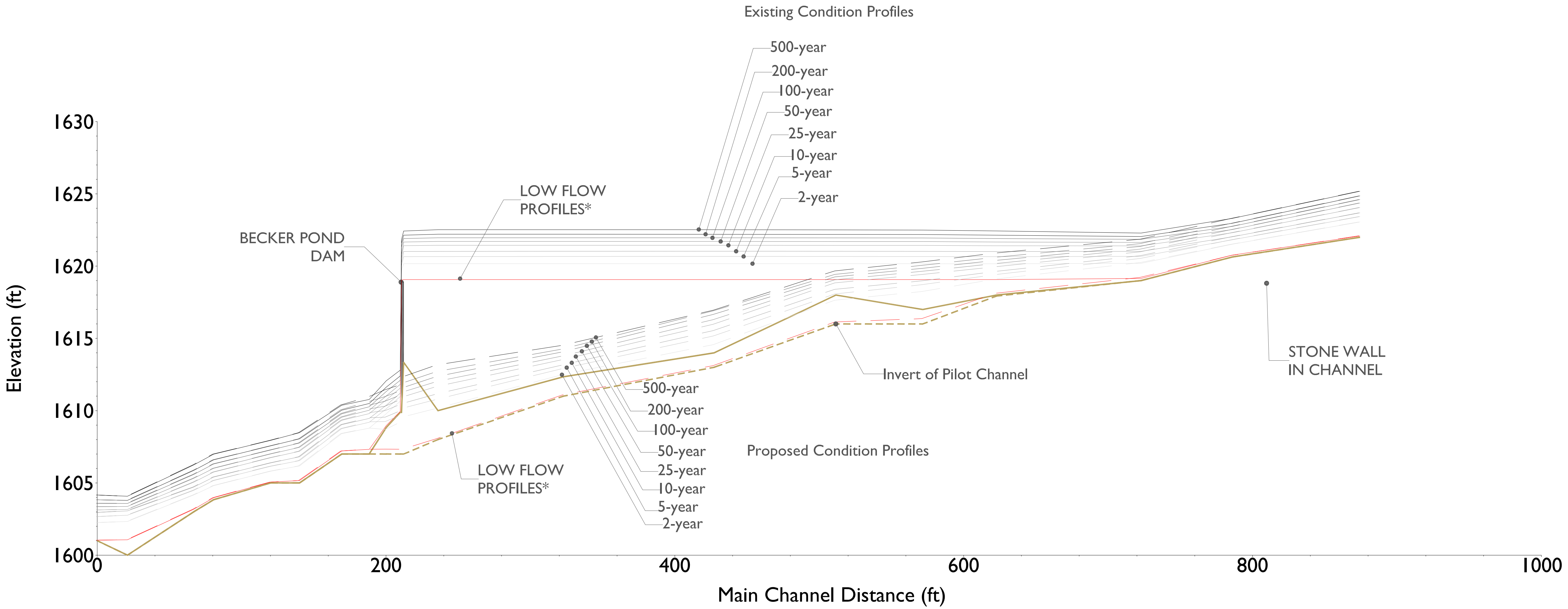
Becker_Pond_Dam Plan: 1) PRCOND_AUG2020 2) EXAUG2019
RS = 30.23758



Becker_Pond_Dam Plan: 1) PRCOND_AUG2020 2) EXAUG2019
RS = 9.272341



Becker Pond Dam Detailed Designs (75%) September 2020
Flood profiles produced using peak discharge rates
developed via the regional regression equations (USGS).



NOTES:
(1) FOOTBRIDGE LOCATED AT STATION 885 +/- BEYOND THE UPSTREAM LIMIT OF THE HYDRAULIC MODEL
(2) DIFFERENCES BETWEEN LOW FLOW PROFILES ARE INDISTINGUISHABLE AT THIS SCALE
(3) STATIONING ON THE DESIGN PLANS AND STATIONING IN THE HYDRAULIC MODEL MAY DIFFER. THIS DIAGRAM PRESENTS STATIONING CONSISTENT WITH THE HYDRAULIC MODEL.

PROFILES

0 X XX
SCALE IN FEET

REVISED SEPTEMBER 2020 (POST-MEPA REVIEW)

inter·fluve
220 Concord Avenue, 2nd Floor
Cambridge, MA 02136
617.714.5537
www.interfluve.com

BECKER POND DAM REMOVAL PROJECT
HYDRAULIC MODEL RESULTS SUMMARY
PROFILES

Plan	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Existing Condition WSE (ft NAVD)	Proposed Condition WSE (ft NAVD)	Δ (ft)
Existing Condition	1	873.7751	2-YEAR	80	1622.0	1623.1	1623.1	1623.5	0.014	5.0	16.1	22.4	0.99	1623.1	1623.1	0.0
	1	782.6332	2-YEAR	80	1620.6	1621.5	1621.5	1621.8	0.016	4.6	17.5	27.7	1.01	1621.5	1621.5	0.0
	1	719.1365	2-YEAR	80	1619.0	1620.2	0.0	1620.4	0.008	3.6	22.5	32.1	0.74	1620.2	1620.3	0.0
	1	617.6659	2-YEAR	80	1618.0	1620.2	0.0	1620.2	0.001	1.4	55.6	42.8	0.22	1620.2	1619.1	-1.1
	1	566.4481	2-YEAR	80	1617.0	1620.2	0.0	1620.2	0.000	0.7	113.5	67.8	0.09	1620.2	1618.2	-1.9
	1	510.7805	2-YEAR	80	1618.0	1620.2	0.0	1620.2	0.000	0.5	154.8	97.6	0.07	1620.2	1617.7	-2.5
	1	430.2187	2-YEAR	80	1614.0	1620.2	0.0	1620.2	0.000	0.2	376.3	97.7	0.02	1620.2	1614.6	-5.6
	1	334.6249	2-YEAR	80	1612.3	1620.2	0.0	1620.2	0.000	0.1	618.1	102.9	0.01	1620.2	1612.5	-7.7
	1	248.6842	2-YEAR	80	1610.0	1620.2	0.0	1620.2	0.000	0.1	607.7	93.5	0.01	1620.2	1610.2	-10.0
	1	226.1339	2-YEAR	80	1613.3	1620.2	1615.3	1620.2	0.000	0.6	138.4	50.6	0.06	1620.2	1609.6	-10.6
		DAM														
	1	219.1212	2-YEAR	80	1609.9	1610.7	1610.7	1611.0	0.015	4.8	16.8	23.9	1.00	1610.7	1609.2	-1.5
	1	209.4033	2-YEAR	80	1608.8	1609.8	1609.8	1610.2	0.015	5.0	16.2	21.7	1.01	1609.8	1608.7	-1.1
	1	197.6462	2-YEAR	80	1607.0	1608.8	0.0	1608.9	0.002	2.6	31.4	27.6	0.42	1608.8	1608.8	0.0
	1	178.6404	2-YEAR	80	1607.0	1608.4	1608.4	1608.8	0.016	4.9	16.5	23.4	1.02	1608.4	1608.4	0.0
	1	149.4387	2-YEAR	80	1605.0	1606.2	0.0	1606.4	0.009	4.3	23.5	29.8	0.80	1606.2	1606.2	0.0
	1	129.4051	2-YEAR	80	1605.0	1605.8	1605.8	1606.2	0.014	4.9	16.7	24.1	0.99	1605.8	1605.8	0.0
	1	89.91512	2-YEAR	80	1603.8	1604.8	1604.8	1605.2	0.014	5.0	16.8	24.3	0.98	1604.8	1604.8	0.0
	1	76.1522	2-YEAR	80	1603.0	1604.2	1604.2	1604.5	0.015	4.8	16.9	25.5	1.00	1604.2	1604.2	0.0
	1	30.23758	2-YEAR	80	1600.0	1602.3	1600.9	1602.4	0.000	1.4	59.7	36.1	0.18	1602.3	1602.3	0.0
	1	9.272341	2-YEAR	80	1601.0	1602.3	1601.7	1602.3	0.002	2.4	35.9	58.9	0.40	1602.3	1602.3	0.0

	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Proposed Condition	1	873.7751	2-YEAR	80	1622.0	1623.1	1623.1	1623.5	0.014	5.0	16.1	22.4	0.99
	1	782.6332	2-YEAR	80	1620.6	1621.5	1621.5	1621.8	0.015	4.5	17.6	27.7	1.00
	1	719.1365	2-YEAR	80	1619.0	1620.3	0.0	1620.4	0.006	3.4	24.0	32.5	0.67
	1	617.6659	2-YEAR	80	1617.9	1619.1	1619.1	1619.4	0.016	4.6	17.3	28.1	1.01
	1	566.4481	2-YEAR	80	1616.0	1618.2	1618.1	1618.7	0.007	5.9	22.0	25.8	0.72
	1	510.7805	2-YEAR	80	1616.0	1617.7	1617.7	1618.1	0.015	5.3	15.2	17.5	1.00
	1	430.2187	2-YEAR	80	1613.0	1614.6	1614.6	1615.1	0.012	6.1	14.3	15.2	0.93
	1	334.6249	2-YEAR	80	1611.0	1612.5	1612.5	1612.9	0.009	5.5	19.8	29.5	0.83
	1	248.6842	2-YEAR	80	1608.0	1610.2	0.0	1610.3	0.001	2.5	31.8	19.1	0.33
	1	226.1339	2-YEAR	80	1607.0	1609.6	1609.6	1610.1	0.010	7.2	18.1	17.1	0.83
		DAM											
	1	219.1212	2-YEAR	80	1607.0	1609.2	1609.2	1609.7	0.015	5.6	14.4	16.4	1.01
	1	209.4033	2-YEAR	80	1607.0	1608.7	1608.7	1609.2	0.010	6.1	16.2	18.5	0.87
	1	197.6462	2-YEAR	80	1607.0	1608.8	0.0	1608.9	0.002	2.4	32.9	27.7	0.39
	1	178.6404	2-YEAR	80	1607.0	1608.4	1608.4	1608.8	0.015	4.9	16.6	23.5	1.01
	1	149.4387	2-YEAR	80	1605.0	1606.2	0.0	1606.4	0.009	4.3	23.5	29.8	0.80
	1	129.4051	2-YEAR	80	1605.0	1605.8	1605.8	1606.2	0.014	4.9	16.7	24.1	0.99
	1	89.91512	2-YEAR	80	1603.8	1604.8	1604.8	1605.2	0.014	5.0	16.8	24.3	0.98
	1	76.1522	2-YEAR	80	1603.0	1604.2	1604.2	1604.5	0.015	4.8	16.9	25.5	1.00
	1	30.23758	2-YEAR	80	1600.0	1602.3	1600.9	1602.4	0.000	1.4	59.7	36.1	0.18
	1	9.272341	2-YEAR	80	1601.0	1602.3	1601.7	1602.3	0.002	2.4	35.9	58.9	0.40

Plan	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Existing Condition	1	873.7751	5-YEAR	140	1622.0	1623.4	1623.4	1624.0	0.012	5.9	25.3	27.8	0.96
	1	782.6332	5-YEAR	140	1620.6	1621.8	1621.8	1622.3	0.014	5.2	26.8	32.2	1.01
	1	719.1365	5-YEAR	140	1619.0	1620.7	0.0	1620.9	0.004	3.7	38.8	35.7	0.60
	1	617.6659	5-YEAR	140	1618.0	1620.7	0.0	1620.7	0.001	1.8	77.1	45.1	0.24
	1	566.4481	5-YEAR	140	1617.0	1620.7	0.0	1620.7	0.000	1.0	148.5	73.0	0.11
	1	510.7805	5-YEAR	140	1618.0	1620.7	0.0	1620.7	0.000	0.7	204.1	100.1	0.08
	1	430.2187	5-YEAR	140	1614.0	1620.7	0.0	1620.7	0.000	0.3	425.4	99.0	0.03
	1	334.6249	5-YEAR	140	1612.3	1620.7	0.0	1620.7	0.000	0.2	669.7	103.6	0.01
	1	248.6842	5-YEAR	140	1610.0	1620.7	0.0	1620.7	0.000	0.2	654.8	95.4	0.01
	1	226.1339	5-YEAR	140	1613.3	1620.7	1615.9	1620.7	0.000	0.9	164.0	53.7	0.08
		DAM											
	1	219.1212	5-YEAR	140	1609.9	1611.0	1611.0	1611.5	0.013	5.8	24.6	24.2	1.00
	1	209.4033	5-YEAR	140	1608.8	1610.1	1610.1	1610.7	0.013	6.0	23.6	22.0	1.00
	1	197.6462	5-YEAR	140	1607.0	1609.2	0.0	1609.4	0.002	3.3	42.8	28.7	0.47
	1	178.6404	5-YEAR	140	1607.0	1608.8	1608.8	1609.2	0.014	5.6	25.0	26.4	1.01
	1	149.4387	5-YEAR	140	1605.0	1606.5	1606.3	1606.9	0.008	5.1	34.6	30.9	0.81
	1	129.4051	5-YEAR	140	1605.0	1606.2	1606.2	1606.7	0.012	5.8	25.3	26.3	0.98
	1	89.91512	5-YEAR	140	1603.8	1605.2	1605.2	1605.7	0.012	5.9	26.1	27.1	0.96
	1	76.1522	5-YEAR	140	1603.0	1604.5	1604.5	1605.0	0.013	5.7	25.3	27.2	0.99
	1	30.23758	5-YEAR	140	1600.0	1602.8	1601.3	1602.8	0.001	1.9	76.1	39.1	0.22
	1	9.272341	5-YEAR	140	1601.0	1602.7	1602.1	1602.8	0.002	2.9	52.7	67.4	0.42

Existing Condition WSE (ft NAVD)	Proposed Condition WSE (ft NAVD)	Δ (ft)
1623.4	1623.4	0.0
1621.8	1621.8	0.0
1620.7	1620.5	-0.2
1620.7	1619.4	-1.2
1620.7	1618.7	-2.0
1620.7	1618.1	-2.6
1620.7	1615.2	-5.5
1620.7	1612.9	-7.8
1620.7	1610.8	-9.9
1620.7	1610.2	-10.5
1611.0	1609.6	-1.3
1610.1	1609.2	-0.9
1609.2	1609.2	0.0
1608.8	1608.8	0.0
1606.5	1606.5	0.0
1606.2	1606.2	0.0
1605.2	1605.2	0.0
1604.5	1604.5	0.0
1602.8	1602.8	0.0
1602.7	1602.7	0.0

	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Proposed Condition	1	873.7751	5-YEAR	140	1622.0	1623.4	1623.4	1624.0	0.012	5.9	25.4	27.9	0.96
	1	782.6332	5-YEAR	140	1620.6	1621.8	1621.8	1622.3	0.014	5.2	26.8	32.2	1.01
	1	719.1365	5-YEAR	140	1619.0	1620.5	0.0	1620.8	0.007	4.3	33.5	34.6	0.73
	1	617.6659	5-YEAR	140	1617.9	1619.4	1619.4	1619.9	0.013	5.4	27.0	33.3	0.98
	1	566.4481	5-YEAR	140	1616.0	1618.7	1618.7	1619.2	0.008	7.1	36.5	36.3	0.78
	1	510.7805	5-YEAR	140	1616.0	1618.1	1618.1	1618.7	0.013	6.1	23.2	28.1	0.97
	1	430.2187	5-YEAR	140	1613.0	1615.2	1615.2	1615.8	0.009	6.9	25.7	24.4	0.88
	1	334.6249	5-YEAR	140	1611.0	1612.9	1612.9	1613.4	0.008	6.4	34.0	38.7	0.84
	1	248.6842	5-YEAR	140	1608.0	1610.8	0.0	1611.0	0.002	3.2	45.4	24.6	0.37
	1	226.1339	5-YEAR	140	1607.0	1610.2	1610.2	1610.8	0.009	8.2	30.3	22.6	0.84
		DAM											
	1	219.1212	5-YEAR	140	1607.0	1609.6	1609.6	1610.3	0.012	6.5	23.3	21.3	0.95
	1	209.4033	5-YEAR	140	1607.0	1609.2	1609.2	1609.9	0.008	7.0	27.6	23.1	0.86
	1	197.6462	5-YEAR	140	1607.0	1609.2	0.0	1609.4	0.002	3.2	44.9	28.8	0.44
	1	178.6404	5-YEAR	140	1607.0	1608.8	1608.8	1609.3	0.014	5.7	25.2	26.5	1.00
	1	149.4387	5-YEAR	140	1605.0	1606.5	1606.3	1606.9	0.008	5.1	34.6	30.9	0.81
	1	129.4051	5-YEAR	140	1605.0	1606.2	1606.2	1606.7	0.012	5.8	25.3	26.3	0.98
	1	89.91512	5-YEAR	140	1603.8	1605.2	1605.2	1605.7	0.012	5.9	26.1	27.1	0.96
	1	76.1522	5-YEAR	140	1603.0	1604.5	1604.5	1605.0	0.013	5.7	25.3	27.2	0.99
	1	30.23758	5-YEAR	140	1600.0	1602.8	1601.3	1602.8	0.001	1.9	76.1	39.1	0.22
	1	9.272341	5-YEAR	140	1601.0	1602.7	1602.1	1602.8	0.002	2.9	52.7	67.4	0.42

Plan	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Existing Condition	1	873.7751	10-YEAR	190	1622.0	1623.7	1623.7	1624.3	0.011	6.4	33.1	31.7	0.95
	1	782.6332	10-YEAR	190	1620.6	1622.0	1622.0	1622.5	0.014	5.6	33.7	35.8	1.01
	1	719.1365	10-YEAR	190	1619.0	1621.0	0.0	1621.3	0.003	3.9	51.4	38.2	0.55
	1	617.6659	10-YEAR	190	1618.0	1621.0	0.0	1621.1	0.001	2.1	93.6	67.7	0.25
	1	566.4481	10-YEAR	190	1617.0	1621.0	0.0	1621.1	0.000	1.1	175.3	76.7	0.12
	1	510.7805	10-YEAR	190	1618.0	1621.0	0.0	1621.0	0.000	0.8	240.3	101.9	0.09
	1	430.2187	10-YEAR	190	1614.0	1621.0	0.0	1621.0	0.000	0.4	461.2	99.9	0.03
	1	334.6249	10-YEAR	190	1612.3	1621.0	0.0	1621.0	0.000	0.3	707.1	104.2	0.02
	1	248.6842	10-YEAR	190	1610.0	1621.0	0.0	1621.0	0.000	0.3	689.4	96.7	0.02
	1	226.1339	10-YEAR	190	1613.3	1621.0	1616.2	1621.0	0.000	1.1	183.5	80.0	0.10
		DAM											
	1	219.1212	10-YEAR	190	1609.9	1611.2	1611.2	1611.8	0.012	6.4	30.2	24.3	1.00
	1	209.4033	10-YEAR	190	1608.8	1610.4	1610.4	1611.0	0.012	6.6	29.1	22.1	1.00
	1	197.6462	10-YEAR	190	1607.0	1609.5	0.0	1609.7	0.003	3.9	50.4	29.4	0.50
	1	178.6404	10-YEAR	190	1607.0	1609.0	1609.0	1609.6	0.014	5.9	32.8	32.5	1.01
	1	149.4387	10-YEAR	190	1605.0	1606.8	1606.6	1607.2	0.008	5.7	43.0	31.6	0.81
	1	129.4051	10-YEAR	190	1605.0	1606.4	1606.4	1607.0	0.012	6.4	31.5	27.6	0.98
	1	89.91512	10-YEAR	190	1603.8	1605.4	1605.4	1606.0	0.011	6.5	32.6	28.0	0.97
	1	76.1522	10-YEAR	190	1603.0	1604.7	1604.7	1605.3	0.012	6.3	31.7	28.5	0.99
	1	30.23758	10-YEAR	190	1600.0	1603.1	1601.5	1603.1	0.001	2.3	88.0	41.3	0.25
	1	9.272341	10-YEAR	190	1601.0	1603.0	1602.3	1603.1	0.002	3.3	64.9	73.4	0.43

Existing Condition WSE (ft NAVD)	Proposed Condition WSE (ft NAVD)	Δ (ft)
1623.7	1623.7	0.0
1622.0	1622.0	0.0
1621.0	1620.7	-0.3
1621.0	1619.6	-1.4
1621.0	1619.0	-2.0
1621.0	1618.4	-2.6
1621.0	1615.5	-5.5
1621.0	1613.2	-7.9
1621.0	1611.2	-9.9
1621.0	1610.5	-10.5
1611.2	1610.0	-1.3
1610.4	1609.6	-0.8
1609.5	1609.5	0.0
1609.0	1609.0	0.0
1606.8	1606.8	0.0
1606.4	1606.4	0.0
1605.4	1605.4	0.0
1604.7	1604.7	0.0
1603.1	1603.1	0.0
1603.0	1603.0	0.0

	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Proposed Condition	1	873.7751	10-YEAR	190	1622.0	1623.7	1623.7	1624.3	0.011	6.4	33.1	31.7	0.95
	1	782.6332	10-YEAR	190	1620.6	1622.0	1622.0	1622.5	0.014	5.6	33.7	35.8	1.01
	1	719.1365	10-YEAR	190	1619.0	1620.7	0.0	1621.1	0.007	4.9	40.3	36.0	0.77
	1	617.6659	10-YEAR	190	1617.9	1619.6	1619.6	1620.2	0.012	5.9	34.4	36.5	0.97
	1	566.4481	10-YEAR	190	1616.0	1619.0	1618.9	1619.6	0.008	7.8	46.9	41.0	0.82
	1	510.7805	10-YEAR	190	1616.0	1618.4	1618.4	1619.0	0.010	6.4	32.8	51.2	0.90
	1	430.2187	10-YEAR	190	1613.0	1615.5	1615.5	1616.3	0.008	7.3	36.3	31.1	0.85
	1	334.6249	10-YEAR	190	1611.0	1613.2	1613.2	1613.7	0.009	7.0	44.5	44.7	0.87
	1	248.6842	10-YEAR	190	1608.0	1611.2	0.0	1611.4	0.002	3.8	55.2	28.1	0.40
	1	226.1339	10-YEAR	190	1607.0	1610.5	1610.5	1611.2	0.010	9.1	38.2	24.8	0.88
		DAM											
	1	219.1212	10-YEAR	190	1607.0	1610.0	1610.0	1610.7	0.011	7.0	30.6	24.8	0.93
	1	209.4033	10-YEAR	190	1607.0	1609.6	1609.6	1610.3	0.009	7.8	34.9	24.5	0.89
	1	197.6462	10-YEAR	190	1607.0	1609.5	0.0	1609.7	0.002	3.7	52.8	29.5	0.47
	1	178.6404	10-YEAR	190	1607.0	1609.0	1609.0	1609.6	0.014	6.0	32.9	32.5	1.01
	1	149.4387	10-YEAR	190	1605.0	1606.8	1606.6	1607.2	0.008	5.7	43.0	31.6	0.81
	1	129.4051	10-YEAR	190	1605.0	1606.4	1606.4	1607.0	0.012	6.4	31.5	27.6	0.98
	1	89.91512	10-YEAR	190	1603.8	1605.4	1605.4	1606.0	0.011	6.5	32.6	28.0	0.97
	1	76.1522	10-YEAR	190	1603.0	1604.7	1604.7	1605.3	0.012	6.3	31.7	28.5	0.99
	1	30.23758	10-YEAR	190	1600.0	1603.1	1601.5	1603.1	0.001	2.3	88.0	41.3	0.25
	1	9.272341	10-YEAR	190	1601.0	1603.0	1602.3	1603.1	0.002	3.3	64.9	73.4	0.43

Plan	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Existing Condition WSE (ft NAVD)	Proposed Condition WSE (ft NAVD)	Δ (ft)
Existing Condition	1	873.7751	25-YEAR	275	1622.0	1624.1	1624.1	1624.8	0.010	7.1	45.7	37.2	0.94	1624.1	1624.1	0.0
	1	782.6332	25-YEAR	275	1620.6	1622.3	1622.3	1622.9	0.012	6.3	44.4	39.8	0.99	1622.3	1622.3	0.0
	1	719.1365	25-YEAR	275	1619.0	1621.4	0.0	1621.7	0.003	4.5	66.4	41.0	0.57	1621.4	1621.0	-0.4
	1	617.6659	25-YEAR	275	1618.0	1621.4	0.0	1621.5	0.001	2.5	121.9	73.5	0.27	1621.4	1620.0	-1.5
	1	566.4481	25-YEAR	275	1617.0	1621.4	0.0	1621.5	0.000	1.4	207.6	81.5	0.14	1621.4	1619.4	-2.0
	1	510.7805	25-YEAR	275	1618.0	1621.4	0.0	1621.5	0.000	1.0	282.6	104.0	0.10	1621.4	1618.8	-2.6
	1	430.2187	25-YEAR	275	1614.0	1621.4	0.0	1621.5	0.000	0.6	502.5	100.5	0.04	1621.4	1616.0	-5.5
	1	334.6249	25-YEAR	275	1612.3	1621.4	0.0	1621.5	0.000	0.4	750.2	104.7	0.02	1621.4	1613.5	-7.9
	1	248.6842	25-YEAR	275	1610.0	1621.4	0.0	1621.5	0.000	0.4	729.5	98.2	0.02	1621.4	1611.7	-9.8
	1	226.1339	25-YEAR	275	1613.3	1621.4	1616.7	1621.4	0.000	1.4	216.2	83.0	0.12	1621.4	1611.0	-10.5
		DAM														
	1	219.1212	25-YEAR	275	1609.9	1611.6	1611.6	1612.4	0.011	7.2	38.8	24.5	1.00	1611.6	1610.4	-1.2
	1	209.4033	25-YEAR	275	1608.8	1610.8	1610.8	1611.6	0.011	7.4	37.5	22.4	1.00	1610.8	1610.0	-0.8
	1	197.6462	25-YEAR	275	1607.0	1609.8	0.0	1610.1	0.003	4.7	60.4	30.3	0.56	1609.8	1609.9	0.1
	1	178.6404	25-YEAR	275	1607.0	1609.3	1609.3	1610.0	0.012	6.6	42.5	33.7	1.00	1609.3	1609.3	0.0
	1	149.4387	25-YEAR	275	1605.0	1607.2	1606.9	1607.7	0.007	6.5	55.4	33.4	0.83	1607.2	1607.2	0.0
	1	129.4051	25-YEAR	275	1605.0	1606.7	1606.7	1607.5	0.011	7.1	41.8	29.7	0.97	1606.7	1606.7	0.0
	1	89.91512	25-YEAR	275	1603.8	1605.8	1605.8	1606.5	0.011	7.4	42.6	29.5	0.98	1605.8	1605.8	0.0
	1	76.1522	25-YEAR	275	1603.0	1605.1	1605.1	1605.8	0.011	7.1	41.8	30.6	0.99	1605.1	1605.1	0.0
	1	30.23758	25-YEAR	275	1600.0	1603.2	1601.8	1603.3	0.001	3.1	92.1	42.0	0.34	1603.2	1603.2	0.0
	1	9.272341	25-YEAR	275	1601.0	1603.1	1602.5	1603.3	0.002	3.5	113.4	88.5	0.44	1603.1	1603.1	0.0

	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Proposed Condition	1	873.7751	25-YEAR	275	1622.0	1624.1	1624.1	1624.8	0.010	7.1	45.7	37.2	0.94
	1	782.6332	25-YEAR	275	1620.6	1622.3	1622.3	1622.9	0.012	6.3	44.4	39.8	0.99
	1	719.1365	25-YEAR	275	1619.0	1621.0	1620.8	1621.5	0.008	5.8	50.2	37.9	0.82
	1	617.6659	25-YEAR	275	1617.9	1620.0	1620.0	1620.6	0.011	6.4	47.1	41.3	0.95
	1	566.4481	25-YEAR	275	1616.0	1619.4	1619.4	1620.0	0.007	8.3	70.6	57.6	0.81
	1	510.7805	25-YEAR	275	1616.0	1618.8	1618.8	1619.4	0.007	6.2	64.8	72.8	0.78
	1	430.2187	25-YEAR	275	1613.0	1616.0	1616.0	1616.8	0.008	8.1	51.3	36.9	0.87
	1	334.6249	25-YEAR	275	1611.0	1613.5	1613.5	1614.2	0.008	7.7	62.4	54.0	0.88
	1	248.6842	25-YEAR	275	1608.0	1611.7	0.0	1612.0	0.002	4.5	71.0	32.8	0.43
	1	226.1339	25-YEAR	275	1607.0	1611.0	1611.0	1611.8	0.011	10.2	50.0	27.8	0.93
		DAM											
	1	219.1212	25-YEAR	275	1607.0	1610.4	1610.4	1611.3	0.010	7.8	42.3	28.2	0.93
	1	209.4033	25-YEAR	275	1607.0	1610.0	1610.0	1610.9	0.009	8.8	46.3	26.5	0.92
	1	197.6462	25-YEAR	275	1607.0	1609.9	0.0	1610.2	0.003	4.4	63.5	30.4	0.52
	1	178.6404	25-YEAR	275	1607.0	1609.3	1609.3	1610.0	0.012	6.7	43.0	33.8	1.00
	1	149.4387	25-YEAR	275	1605.0	1607.2	1606.9	1607.7	0.007	6.5	55.4	33.4	0.83
	1	129.4051	25-YEAR	275	1605.0	1606.7	1606.7	1607.5	0.011	7.1	41.8	29.7	0.97
	1	89.91512	25-YEAR	275	1603.8	1605.8	1605.8	1606.5	0.011	7.4	42.6	29.5	0.98
	1	76.1522	25-YEAR	275	1603.0	1605.1	1605.1	1605.8	0.011	7.1	41.8	30.6	0.99
	1	30.23758	25-YEAR	275	1600.0	1603.2	1601.8	1603.3	0.001	3.1	92.1	42.0	0.34
	1	9.272341	25-YEAR	275	1601.0	1603.1	1602.5	1603.3	0.002	3.5	113.4	88.5	0.44

Plan	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Existing Condition WSE (ft NAVD)	Proposed Condition WSE (ft NAVD)	Δ (ft)
Existing Condition	1	873.7751	50-YEAR	345	1622.0	1624.4	1624.4	1625.1	0.008	7.3	58.3	42.4	0.89	1624.4	1624.4	0.0
	1	782.6332	50-YEAR	345	1620.6	1622.5	1622.5	1623.2	0.011	6.7	53.3	43.3	0.98	1622.5	1622.5	0.0
	1	719.1365	50-YEAR	345	1619.0	1621.6	0.0	1622.0	0.004	5.0	76.4	42.7	0.59	1621.6	1621.2	-0.5
	1	617.6659	50-YEAR	345	1618.0	1621.7	0.0	1621.8	0.001	2.7	141.3	77.1	0.29	1621.7	1620.2	-1.5
	1	566.4481	50-YEAR	345	1617.0	1621.7	0.0	1621.7	0.000	1.6	229.5	84.7	0.15	1621.7	1619.6	-2.1
	1	510.7805	50-YEAR	345	1618.0	1621.7	0.0	1621.7	0.000	1.1	310.5	105.4	0.11	1621.7	1619.1	-2.6
	1	430.2187	50-YEAR	345	1614.0	1621.7	0.0	1621.7	0.000	0.7	529.4	100.9	0.05	1621.7	1616.3	-5.4
	1	334.6249	50-YEAR	345	1612.3	1621.7	0.0	1621.7	0.000	0.4	778.3	105.1	0.03	1621.7	1613.8	-7.9
	1	248.6842	50-YEAR	345	1610.0	1621.7	0.0	1621.7	0.000	0.5	755.9	99.3	0.03	1621.7	1612.0	-9.7
	1	226.1339	50-YEAR	345	1613.3	1621.7	1617.1	1621.7	0.000	1.6	237.8	85.3	0.13	1621.7	1611.3	-10.4
		DAM														
	1	219.1212	50-YEAR	345	1609.9	1611.8	1611.8	1612.8	0.011	7.8	45.3	24.7	1.00	1611.8	1610.7	-1.1
	1	209.4033	50-YEAR	345	1608.8	1611.0	1611.0	1612.0	0.011	8.0	43.6	22.6	1.01	1611.0	1610.3	-0.7
	1	197.6462	50-YEAR	345	1607.0	1610.0	0.0	1610.5	0.004	5.3	67.7	30.9	0.60	1610.0	1610.1	0.1
	1	178.6404	50-YEAR	345	1607.0	1609.5	1609.5	1610.3	0.012	7.1	49.9	34.6	1.00	1609.5	1609.6	0.0
	1	149.4387	50-YEAR	345	1605.0	1607.5	1607.1	1608.1	0.007	7.1	64.7	35.0	0.84	1607.5	1607.5	0.0
	1	129.4051	50-YEAR	345	1605.0	1607.0	1607.0	1607.9	0.010	7.7	49.7	31.2	0.97	1607.0	1607.0	0.0
	1	89.91512	50-YEAR	345	1603.8	1606.0	1606.0	1606.9	0.010	7.9	50.5	31.1	0.99	1606.0	1606.0	0.0
	1	76.1522	50-YEAR	345	1603.0	1605.3	1605.3	1606.2	0.010	7.5	50.2	32.5	0.97	1605.3	1605.3	0.0
	1	30.23758	50-YEAR	345	1600.0	1603.4	1602.1	1603.6	0.001	3.6	101.0	43.5	0.38	1603.4	1603.4	0.0
	1	9.272341	50-YEAR	345	1601.0	1603.4	1602.7	1603.5	0.002	3.7	133.6	89.5	0.44	1603.4	1603.4	0.0

	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Proposed Condition	1	873.7751	50-YEAR	345	1622.0	1624.4	1624.4	1625.1	0.008	7.3	58.3	42.4	0.89
	1	782.6332	50-YEAR	345	1620.6	1622.5	1622.5	1623.2	0.011	6.7	53.3	43.3	0.98
	1	719.1365	50-YEAR	345	1619.0	1621.2	1621.0	1621.8	0.008	6.4	57.3	39.3	0.87
	1	617.6659	50-YEAR	345	1617.9	1620.2	1620.2	1620.9	0.010	6.9	56.4	42.8	0.95
	1	566.4481	50-YEAR	345	1616.0	1619.6	1619.6	1620.2	0.008	8.8	83.5	60.7	0.83
	1	510.7805	50-YEAR	345	1616.0	1619.1	1619.1	1619.6	0.007	6.6	81.3	79.4	0.78
	1	430.2187	50-YEAR	345	1613.0	1616.3	1616.3	1617.2	0.008	8.7	64.1	43.2	0.87
	1	334.6249	50-YEAR	345	1611.0	1613.8	1613.8	1614.4	0.008	8.2	76.9	60.5	0.88
	1	248.6842	50-YEAR	345	1608.0	1612.0	0.0	1612.4	0.002	5.0	82.7	35.9	0.46
	1	226.1339	50-YEAR	345	1607.0	1611.3	1611.3	1612.2	0.011	10.8	59.7	29.9	0.95
		DAM											
	1	219.1212	50-YEAR	345	1607.0	1610.7	1610.7	1611.7	0.009	8.2	52.1	30.5	0.91
	1	209.4033	50-YEAR	345	1607.0	1610.3	1610.3	1611.3	0.009	9.5	54.8	27.9	0.95
	1	197.6462	50-YEAR	345	1607.0	1610.1	0.0	1610.5	0.003	5.0	71.2	31.1	0.56
	1	178.6404	50-YEAR	345	1607.0	1609.6	1609.6	1610.4	0.012	7.2	50.6	34.7	1.00
	1	149.4387	50-YEAR	345	1605.0	1607.5	1607.1	1608.1	0.007	7.1	64.7	35.0	0.84
	1	129.4051	50-YEAR	345	1605.0	1607.0	1607.0	1607.9	0.010	7.7	49.7	31.2	0.97
	1	89.91512	50-YEAR	345	1603.8	1606.0	1606.0	1606.9	0.010	7.9	50.5	31.1	0.99
	1	76.1522	50-YEAR	345	1603.0	1605.3	1605.3	1606.2	0.010	7.5	50.2	32.5	0.97
	1	30.23758	50-YEAR	345	1600.0	1603.4	1602.1	1603.6	0.001	3.6	101.0	43.5	0.38
	1	9.272341	50-YEAR	345	1601.0	1603.4	1602.7	1603.5	0.002	3.7	133.6	89.5	0.44

Plan	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Existing Condition	1	873.7751	100-YEAR	425	1622.0	1624.6	1624.6	1625.5	0.008	7.9	68.6	43.4	0.91
	1	782.6332	100-YEAR	425	1620.6	1622.8	1622.8	1623.5	0.010	7.1	63.3	46.9	0.97
	1	719.1365	100-YEAR	425	1619.0	1621.9	0.0	1622.3	0.004	5.5	85.8	44.3	0.63
	1	617.6659	100-YEAR	425	1618.0	1621.9	0.0	1622.1	0.001	3.1	160.3	80.5	0.31
	1	566.4481	100-YEAR	425	1617.0	1622.0	0.0	1622.0	0.000	1.8	250.9	87.7	0.17
	1	510.7805	100-YEAR	425	1618.0	1622.0	0.0	1622.0	0.000	1.3	336.9	106.6	0.12
	1	430.2187	100-YEAR	425	1614.0	1622.0	0.0	1622.0	0.000	0.8	554.8	101.3	0.06
	1	334.6249	100-YEAR	425	1612.3	1622.0	0.0	1622.0	0.000	0.5	804.7	105.4	0.03
	1	248.6842	100-YEAR	425	1610.0	1622.0	0.0	1622.0	0.000	0.6	781.0	100.2	0.03
	1	226.1339	100-YEAR	425	1613.3	1621.9	1617.5	1622.0	0.000	1.9	258.2	87.8	0.15
		DAM											
	1	219.1212	100-YEAR	425	1609.9	1612.1	1612.1	1613.2	0.010	8.4	52.1	24.8	1.00
	1	209.4033	100-YEAR	425	1608.8	1611.3	1611.3	1612.5	0.010	8.6	50.4	22.7	1.00
	1	197.6462	100-YEAR	425	1607.0	1610.3	0.0	1610.8	0.004	6.0	75.0	31.5	0.64
	1	178.6404	100-YEAR	425	1607.0	1609.8	1609.8	1610.7	0.011	7.6	58.1	35.6	1.00
	1	149.4387	100-YEAR	425	1605.0	1607.8	1607.4	1608.4	0.007	7.6	75.4	36.8	0.85
	1	129.4051	100-YEAR	425	1605.0	1607.3	1607.3	1608.3	0.010	8.2	58.5	32.7	0.97
	1	89.91512	100-YEAR	425	1603.8	1606.3	1606.3	1607.3	0.010	8.4	60.1	33.2	0.98
	1	76.1522	100-YEAR	425	1603.0	1605.6	1605.6	1606.5	0.010	8.1	59.0	34.4	0.97
	1	30.23758	100-YEAR	425	1600.0	1603.6	1602.3	1603.8	0.002	4.2	110.3	47.8	0.42
	1	9.272341	100-YEAR	425	1601.0	1603.6	1603.0	1603.8	0.002	4.0	154.7	90.6	0.45

Existing Condition WSE (ft NAVD)	Proposed Condition WSE (ft NAVD)	Δ (ft)
1624.6	1624.6	0.0
1622.8	1622.8	0.0
1621.9	1621.4	-0.5
1621.9	1620.4	-1.5
1622.0	1619.9	-2.1
1622.0	1619.3	-2.7
1622.0	1616.7	-5.3
1622.0	1614.1	-7.9
1622.0	1612.4	-9.6
1621.9	1611.6	-10.3
1612.1	1611.0	-1.1
1611.3	1610.7	-0.7
1610.3	1610.4	0.1
1609.8	1609.8	0.0
1607.8	1607.8	0.0
1607.3	1607.3	0.0
1606.3	1606.3	0.0
1605.6	1605.6	0.0
1603.6	1603.6	0.0
1603.6	1603.6	0.0

	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Proposed Condition	1	873.7751	100-YEAR	425	1622.0	1624.6	1624.6	1625.5	0.008	7.9	68.6	43.4	0.91
	1	782.6332	100-YEAR	425	1620.6	1622.8	1622.8	1623.5	0.010	7.1	63.3	46.9	0.97
	1	719.1365	100-YEAR	425	1619.0	1621.4	1621.3	1622.1	0.009	7.1	64.9	40.7	0.90
	1	617.6659	100-YEAR	425	1617.9	1620.4	1620.4	1621.2	0.010	7.3	65.6	43.8	0.96
	1	566.4481	100-YEAR	425	1616.0	1619.9	1619.9	1620.5	0.008	9.5	96.4	63.7	0.87
	1	510.7805	100-YEAR	425	1616.0	1619.3	1619.3	1619.8	0.007	7.0	97.0	83.0	0.79
	1	430.2187	100-YEAR	425	1613.0	1616.7	1616.7	1617.5	0.007	8.9	81.1	50.8	0.85
	1	334.6249	100-YEAR	425	1611.0	1614.1	1614.1	1614.7	0.007	8.4	95.3	66.6	0.86
	1	248.6842	100-YEAR	425	1608.0	1612.4	0.0	1612.8	0.002	5.5	96.0	40.5	0.48
	1	226.1339	100-YEAR	425	1607.0	1611.6	1611.6	1612.6	0.011	11.7	68.8	31.8	0.99
		DAM											
	1	219.1212	100-YEAR	425	1607.0	1611.0	1611.0	1612.1	0.009	8.8	61.8	32.1	0.91
	1	209.4033	100-YEAR	425	1607.0	1610.7	1610.7	1611.8	0.009	10.1	64.7	29.4	0.95
	1	197.6462	100-YEAR	425	1607.0	1610.4	0.0	1610.8	0.003	5.6	79.2	31.8	0.59
	1	178.6404	100-YEAR	425	1607.0	1609.8	1609.8	1610.7	0.011	7.7	59.0	35.7	1.00
	1	149.4387	100-YEAR	425	1605.0	1607.8	1607.4	1608.4	0.007	7.6	75.4	36.8	0.85
	1	129.4051	100-YEAR	425	1605.0	1607.3	1607.3	1608.3	0.010	8.2	58.5	32.7	0.97
	1	89.91512	100-YEAR	425	1603.8	1606.3	1606.3	1607.3	0.010	8.4	60.1	33.2	0.98
	1	76.1522	100-YEAR	425	1603.0	1605.6	1605.6	1606.5	0.010	8.1	59.0	34.4	0.97
	1	30.23758	100-YEAR	425	1600.0	1603.6	1602.3	1603.8	0.002	4.2	110.3	47.8	0.42
	1	9.272341	100-YEAR	425	1601.0	1603.6	1603.0	1603.8	0.002	4.0	154.7	90.6	0.45

Plan	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Existing Condition	1	873.7751	200-YEAR	515	1622.0	1624.9	1624.9	1625.8	0.008	8.4	79.8	44.4	0.91
	1	782.6332	200-YEAR	515	1620.6	1623.0	1623.0	1623.8	0.010	7.6	73.9	50.5	0.97
	1	719.1365	200-YEAR	515	1619.0	1622.1	0.0	1622.6	0.004	6.1	94.7	49.2	0.67
	1	617.6659	200-YEAR	515	1618.0	1622.1	0.0	1622.3	0.001	3.4	179.4	83.7	0.33
	1	566.4481	200-YEAR	515	1617.0	1622.2	0.0	1622.3	0.000	2.0	272.3	90.8	0.19
	1	510.7805	200-YEAR	515	1618.0	1622.2	0.0	1622.2	0.000	1.5	363.0	107.9	0.13
	1	430.2187	200-YEAR	515	1614.0	1622.2	0.0	1622.2	0.000	0.9	579.6	101.7	0.06
	1	334.6249	200-YEAR	515	1612.3	1622.2	0.0	1622.2	0.000	0.6	830.6	105.7	0.04
	1	248.6842	200-YEAR	515	1610.0	1622.2	0.0	1622.2	0.000	0.7	805.6	101.2	0.04
	1	226.1339	200-YEAR	515	1613.3	1622.1	1617.8	1622.2	0.000	2.1	279.0	91.1	0.17
		DAM											
	1	219.1212	200-YEAR	515	1609.9	1612.4	1612.4	1613.6	0.010	8.9	59.5	25.0	1.00
	1	209.4033	200-YEAR	515	1608.8	1611.6	1611.6	1612.9	0.010	9.2	57.4	22.9	1.00
	1	197.6462	200-YEAR	515	1607.0	1610.5	0.0	1611.2	0.004	6.6	82.2	32.1	0.69
	1	178.6404	200-YEAR	515	1607.0	1610.0	1610.0	1611.0	0.010	8.0	67.2	36.6	0.99
	1	149.4387	200-YEAR	515	1605.0	1608.1	1607.7	1608.8	0.007	8.2	86.3	38.5	0.86
	1	129.4051	200-YEAR	515	1605.0	1607.6	1607.6	1608.7	0.009	8.7	68.1	34.3	0.97
	1	89.91512	200-YEAR	515	1603.8	1606.6	1606.6	1607.7	0.009	8.9	70.0	35.0	0.98
	1	76.1522	200-YEAR	515	1603.0	1605.9	1605.9	1606.9	0.009	8.5	68.9	36.4	0.97
	1	30.23758	200-YEAR	515	1600.0	1603.8	1602.5	1604.1	0.002	4.7	120.0	51.9	0.46
	1	9.272341	200-YEAR	515	1601.0	1603.8	1603.0	1604.0	0.002	4.3	176.8	92.0	0.46

Existing Condition WSE (ft NAVD)	Proposed Condition WSE (ft NAVD)	Δ (ft)
1624.9	1624.9	0.0
1623.0	1623.0	0.0
1622.1	1621.6	-0.5
1622.1	1620.6	-1.5
1622.2	1620.1	-2.1
1622.2	1619.4	-2.8
1622.2	1616.9	-5.3
1622.2	1614.3	-8.0
1622.2	1612.7	-9.5
1622.1	1611.9	-10.2
1612.4	1611.3	-1.1
1611.6	1611.0	-0.7
1610.5	1610.6	0.1
1610.0	1610.1	0.0
1608.1	1608.1	0.0
1607.6	1607.6	0.0
1606.6	1606.6	0.0
1605.9	1605.9	0.0
1603.8	1603.8	0.0
1603.8	1603.8	0.0

	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Proposed Condition	1	873.7751	200-YEAR	515	1622.0	1624.9	1624.9	1625.8	0.008	8.4	79.8	44.4	0.91
	1	782.6332	200-YEAR	515	1620.6	1623.0	1623.0	1623.8	0.010	7.6	73.9	50.5	0.97
	1	719.1365	200-YEAR	515	1619.0	1621.6	1621.5	1622.5	0.009	7.7	72.9	42.1	0.94
	1	617.6659	200-YEAR	515	1617.9	1620.6	1620.6	1621.5	0.010	7.8	75.4	44.8	0.97
	1	566.4481	200-YEAR	515	1616.0	1620.1	1620.1	1620.8	0.009	10.1	109.9	66.5	0.90
	1	510.7805	200-YEAR	515	1616.0	1619.4	1619.4	1620.1	0.007	7.5	112.0	86.3	0.82
	1	430.2187	200-YEAR	515	1613.0	1616.9	1616.9	1617.9	0.008	9.6	94.3	55.3	0.88
	1	334.6249	200-YEAR	515	1611.0	1614.3	1614.3	1615.0	0.008	8.9	108.6	68.6	0.89
	1	248.6842	200-YEAR	515	1608.0	1612.7	0.0	1613.2	0.002	6.0	110.6	44.8	0.51
	1	226.1339	200-YEAR	515	1607.0	1611.9	1611.9	1613.0	0.011	12.3	79.8	33.8	1.00
		DAM											
	1	219.1212	200-YEAR	515	1607.0	1611.3	1611.3	1612.5	0.009	9.3	71.6	33.7	0.93
	1	209.4033	200-YEAR	515	1607.0	1611.0	1611.0	1612.2	0.009	10.8	74.4	30.8	0.98
	1	197.6462	200-YEAR	515	1607.0	1610.6	0.0	1611.2	0.004	6.2	87.3	32.4	0.63
	1	178.6404	200-YEAR	515	1607.0	1610.1	1610.1	1611.1	0.010	8.1	68.5	36.8	0.98
	1	149.4387	200-YEAR	515	1605.0	1608.1	1607.7	1608.8	0.007	8.2	86.3	38.5	0.86
	1	129.4051	200-YEAR	515	1605.0	1607.6	1607.6	1608.7	0.009	8.7	68.1	34.3	0.97
	1	89.91512	200-YEAR	515	1603.8	1606.6	1606.6	1607.7	0.009	8.9	70.0	35.0	0.98
	1	76.1522	200-YEAR	515	1603.0	1605.9	1605.9	1606.9	0.009	8.5	68.9	36.4	0.97
	1	30.23758	200-YEAR	515	1600.0	1603.8	1602.5	1604.1	0.002	4.7	120.0	51.9	0.46
	1	9.272341	200-YEAR	515	1601.0	1603.8	1603.0	1604.0	0.002	4.3	176.8	92.0	0.46

Plan	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Existing Condition	1	873.7751	500-YEAR	649	1622.0	1625.2	1625.2	1626.3	0.008	9.1	94.1	45.8	0.94
	1	782.6332	500-YEAR	649	1620.6	1623.3	1623.3	1624.2	0.009	8.0	91.8	55.8	0.94
	1	719.1365	500-YEAR	649	1619.0	1622.3	0.0	1623.0	0.005	7.0	107.0	53.0	0.74
	1	617.6659	500-YEAR	649	1618.0	1622.4	0.0	1622.7	0.001	3.8	204.7	87.8	0.36
	1	566.4481	500-YEAR	649	1617.0	1622.5	0.0	1622.6	0.000	2.4	300.8	94.7	0.21
	1	510.7805	500-YEAR	649	1618.0	1622.5	0.0	1622.6	0.000	1.7	396.8	109.5	0.15
	1	430.2187	500-YEAR	649	1614.0	1622.5	0.0	1622.5	0.000	1.1	611.6	102.2	0.08
	1	334.6249	500-YEAR	649	1612.3	1622.5	0.0	1622.5	0.000	0.8	864.0	106.1	0.05
	1	248.6842	500-YEAR	649	1610.0	1622.5	0.0	1622.5	0.000	0.8	837.7	102.4	0.05
	1	226.1339	500-YEAR	649	1613.3	1622.4	1618.3	1622.5	0.000	2.5	305.8	93.0	0.19
		DAM											
	1	219.1212	500-YEAR	649	1609.9	1612.8	1612.8	1614.2	0.009	9.6	69.7	25.2	1.00
	1	209.4033	500-YEAR	649	1608.8	1612.1	1612.1	1613.6	0.009	9.9	67.4	23.1	1.00
	1	197.6462	500-YEAR	649	1607.0	1610.8	0.0	1611.7	0.005	7.6	91.3	32.8	0.75
	1	178.6404	500-YEAR	649	1607.0	1610.4	1610.4	1611.5	0.010	8.6	80.1	38.0	0.98
	1	149.4387	500-YEAR	649	1605.0	1608.5	1608.1	1609.4	0.007	8.8	103.0	41.0	0.87
	1	129.4051	500-YEAR	649	1605.0	1607.9	1607.9	1609.2	0.009	9.3	81.5	36.3	0.97
	1	89.91512	500-YEAR	649	1603.8	1607.0	1607.0	1608.3	0.009	9.6	84.2	37.5	0.98
	1	76.1522	500-YEAR	649	1603.0	1606.2	1606.2	1607.5	0.009	9.1	83.3	39.1	0.96
	1	30.23758	500-YEAR	649	1600.0	1604.1	1602.9	1604.5	0.002	5.4	133.4	56.6	0.50
	1	9.272341	500-YEAR	649	1601.0	1604.2	1603.0	1604.4	0.002	4.6	207.4	93.7	0.47

Existing Condition WSE (ft NAVD)	Proposed Condition WSE (ft NAVD)	Δ (ft)
1625.2	1625.2	0.0
1623.3	1623.3	0.0
1622.3	1621.9	-0.4
1622.4	1620.9	-1.5
1622.5	1620.3	-2.2
1622.5	1619.7	-2.8
1622.5	1617.0	-5.6
1622.5	1614.5	-8.0
1622.5	1613.2	-9.3
1622.4	1612.4	-10.1
1612.8	1611.8	-1.0
1612.1	1611.5	-0.6
1610.8	1611.0	0.2
1610.4	1610.4	0.0
1608.5	1608.5	0.0
1607.9	1607.9	0.0
1607.0	1607.0	0.0
1606.2	1606.2	0.0
1604.1	1604.1	0.0
1604.2	1604.2	0.0

	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Proposed Condition	1	873.7751	500-YEAR	649	1622.0	1625.2	1625.2	1626.3	0.008	9.1	94.1	45.8	0.94
	1	782.6332	500-YEAR	649	1620.6	1623.3	1623.3	1624.2	0.009	8.0	91.8	55.8	0.94
	1	719.1365	500-YEAR	649	1619.0	1621.9	1621.9	1622.9	0.009	8.4	86.2	44.4	0.95
	1	617.6659	500-YEAR	649	1617.9	1620.9	1620.9	1621.9	0.010	8.4	88.7	46.2	0.99
	1	566.4481	500-YEAR	649	1616.0	1620.3	1620.3	1621.1	0.010	11.0	126.1	69.0	0.95
	1	510.7805	500-YEAR	649	1616.0	1619.7	1619.7	1620.4	0.007	8.1	133.5	90.7	0.85
	1	430.2187	500-YEAR	649	1613.0	1617.0	1617.0	1618.4	0.011	11.8	96.9	56.1	1.08
	1	334.6249	500-YEAR	649	1611.0	1614.5	1614.5	1615.3	0.008	9.7	126.8	71.3	0.93
	1	248.6842	500-YEAR	649	1608.0	1613.2	0.0	1613.8	0.003	6.6	132.0	48.6	0.53
	1	226.1339	500-YEAR	649	1607.0	1612.4	1612.4	1613.6	0.011	13.2	94.7	36.3	1.02
		DAM											
	1	219.1212	500-YEAR	649	1607.0	1611.8	1611.8	1613.1	0.008	10.0	86.7	36.1	0.93
	1	209.4033	500-YEAR	649	1607.0	1611.5	1611.5	1612.9	0.009	11.6	89.4	33.0	0.99
	1	197.6462	500-YEAR	649	1607.0	1611.0	0.0	1611.7	0.004	7.0	98.3	33.3	0.67
	1	178.6404	500-YEAR	649	1607.0	1610.4	1610.4	1611.5	0.010	8.8	80.9	38.1	0.99
	1	149.4387	500-YEAR	649	1605.0	1608.5	1608.1	1609.4	0.007	8.8	103.0	41.0	0.87
	1	129.4051	500-YEAR	649	1605.0	1607.9	1607.9	1609.2	0.009	9.3	81.5	36.3	0.97
	1	89.91512	500-YEAR	649	1603.8	1607.0	1607.0	1608.3	0.009	9.6	84.2	37.5	0.98
	1	76.1522	500-YEAR	649	1603.0	1606.2	1606.2	1607.5	0.009	9.1	83.3	39.1	0.96
	1	30.23758	500-YEAR	649	1600.0	1604.1	1602.9	1604.5	0.002	5.4	133.4	56.6	0.50
	1	9.272341	500-YEAR	649	1601.0	1604.2	1603.0	1604.4	0.002	4.6	207.4	93.7	0.47

Plan	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Existing Condition WSE (ft NAVD)	Proposed Condition WSE (ft NAVD)	Δ (ft)
Existing Condition	1	873.7751	D99	0.06	1622.0	1622.0	1622.0	1622.0	0.003	0.2	0.3	10.3	0.28	1622.0	1622.0	0.0
	1	782.6332	D99	0.06	1620.6	1620.7	1620.7	1620.7	0.017	0.5	0.1	4.7	0.62	1620.7	1620.7	0.0
	1	719.1365	D99	0.06	1619.0	1619.0	1619.0	1619.1	0.042	0.9	0.1	2.5	0.98	1619.0	1619.1	0.0
	1	617.6659	D99	0.06	1618.0	1619.0	0.0	1619.0	0.000	0.0	14.6	26.5	0.00	1619.0	1618.0	-1.0
	1	566.4481	D99	0.06	1617.0	1619.0	0.0	1619.0	0.000	0.0	44.0	51.6	0.00	1619.0	1616.1	-2.9
	1	510.7805	D99	0.06	1618.0	1619.0	0.0	1619.0	0.000	0.0	51.9	78.1	0.00	1619.0	1616.0	-3.0
	1	430.2187	D99	0.06	1614.0	1619.0	0.0	1619.0	0.000	0.0	266.2	92.0	0.00	1619.0	1613.0	-6.0
	1	334.6249	D99	0.06	1612.3	1619.0	0.0	1619.0	0.000	0.0	501.0	98.9	0.00	1619.0	1611.0	-8.0
	1	248.6842	D99	0.06	1610.0	1619.0	0.0	1619.0	0.000	0.0	502.4	88.0	0.00	1619.0	1608.0	-11.0
	1	226.1339	D99	0.06	1613.3	1619.0	1613.4	1619.0	0.000	0.0	90.0	30.4	0.00	1619.0	1607.1	-11.9
		DAM														
	1	219.1212	D99	0.06	1609.9	1609.9	1609.9	1609.9	0.008	0.3	0.2	10.8	0.41	1609.9	1607.1	-2.8
	1	209.4033	D99	0.06	1608.8	1608.9	1608.9	1608.9	0.047	0.9	0.1	2.9	1.02	1608.9	1607.1	-1.8
	1	197.6462	D99	0.06	1607.0	1607.1	0.0	1607.1	0.000	0.2	0.3	4.4	0.12	1607.1	1607.1	0.0
	1	178.6404	D99	0.06	1607.0	1607.1	1607.1	1607.1	0.036	1.0	0.1	1.6	0.95	1607.1	1607.0	0.0
	1	149.4387	D99	0.06	1605.0	1605.0	0.0	1605.0	0.001	0.2	0.4	9.0	0.16	1605.0	1605.0	0.0
	1	129.4051	D99	0.06	1605.0	1605.0	1605.0	1605.0	0.001	0.1	0.4	16.8	0.15	1605.0	1605.0	0.0
	1	89.91512	D99	0.06	1603.8	1603.9	1603.9	1603.9	0.037	0.8	0.1	3.1	0.90	1603.9	1603.9	0.0
	1	76.1522	D99	0.06	1603.0	1603.0	1603.0	1603.1	0.123	1.4	0.0	1.9	1.63	1603.0	1603.0	0.0
	1	30.23758	D99	0.06	1600.0	1601.0	1600.0	1601.0	0.000	0.0	19.4	25.1	0.00	1601.0	1601.0	0.0
	1	9.272341	D99	0.06	1601.0	1601.0	1601.0	1601.0	0.001	0.1	0.6	28.2	0.11	1601.0	1601.0	0.0

	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Proposed Condition	1	873.7751	D99	0.06	1622.0	1622.0	0.0	1622.0	0.005	0.3	0.2	10.3	0.33
	1	782.6332	D99	0.06	1620.6	1620.7	1620.7	1620.7	0.161	1.2	0.1	3.5	1.73
	1	719.1365	D99	0.06	1619.0	1619.1	0.0	1619.1	0.006	0.5	0.1	3.2	0.38
	1	617.6659	D99	0.06	1617.9	1618.0	1618.0	1618.0	0.027	0.9	0.1	2.0	0.81
	1	566.4481	D99	0.06	1616.0	1616.1	0.0	1616.1	0.000	0.2	0.4	3.6	0.10
	1	510.7805	D99	0.06	1616.0	1616.0	1616.0	1616.0	0.028	0.7	0.1	3.5	0.79
	1	430.2187	D99	0.06	1613.0	1613.0	1613.0	1613.0	0.008	0.4	0.2	6.5	0.42
	1	334.6249	D99	0.06	1611.0	1611.0	1611.0	1611.0	0.004	0.3	0.2	7.1	0.31
	1	248.6842	D99	0.06	1608.0	1608.0	1608.0	1608.0	0.002	0.2	0.3	11.7	0.20
	1	226.1339	D99	0.06	1607.0	1607.1	0.0	1607.1	0.001	0.3	0.2	1.9	0.20
		DAM											
	1	219.1212	D99	0.06	1607.0	1607.1	0.0	1607.1	0.001	0.3	0.2	2.4	0.16
	1	209.4033	D99	0.06	1607.0	1607.1	0.0	1607.1	0.000	0.1	0.5	5.5	0.07
	1	197.6462	D99	0.06	1607.0	1607.1	0.0	1607.1	0.000	0.2	0.3	4.5	0.11
	1	178.6404	D99	0.06	1607.0	1607.0	1607.0	1607.1	0.047	1.1	0.1	1.5	1.07
	1	149.4387	D99	0.06	1605.0	1605.0	0.0	1605.0	0.001	0.2	0.4	9.0	0.16
	1	129.4051	D99	0.06	1605.0	1605.0	1605.0	1605.0	0.001	0.1	0.4	16.8	0.15
	1	89.91512	D99	0.06	1603.8	1603.9	1603.9	1603.9	0.037	0.8	0.1	3.1	0.90
	1	76.1522	D99	0.06	1603.0	1603.0	1603.0	1603.1	0.123	1.4	0.0	1.9	1.63
	1	30.23758	D99	0.06	1600.0	1601.0	1600.0	1601.0	0.000	0.0	19.4	25.1	0.00
	1	9.272341	D99	0.06	1601.0	1601.0	1601.0	1601.0	0.001	0.1	0.6	28.2	0.11

Plan	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Existing Condition	1	873.7751	D95	0.1	1622.0	1622.0	1622.0	1622.0	0.010	0.4	0.3	10.3	0.46
	1	782.6332	D95	0.1	1620.6	1620.7	1620.7	1620.7	0.019	0.6	0.2	5.6	0.66
	1	719.1365	D95	0.1	1619.0	1619.1	1619.1	1619.1	0.037	1.0	0.1	2.8	0.96
	1	617.6659	D95	0.1	1618.0	1619.0	0.0	1619.0	0.000	0.0	14.6	26.5	0.00
	1	566.4481	D95	0.1	1617.0	1619.0	0.0	1619.0	0.000	0.0	44.0	51.6	0.00
	1	510.7805	D95	0.1	1618.0	1619.0	0.0	1619.0	0.000	0.0	51.9	78.1	0.00
	1	430.2187	D95	0.1	1614.0	1619.0	0.0	1619.0	0.000	0.0	266.2	92.1	0.00
	1	334.6249	D95	0.1	1612.3	1619.0	0.0	1619.0	0.000	0.0	501.1	98.9	0.00
	1	248.6842	D95	0.1	1610.0	1619.0	0.0	1619.0	0.000	0.0	502.4	88.0	0.00
	1	226.1339	D95	0.1	1613.3	1619.0	1613.4	1619.0	0.000	0.0	90.0	30.4	0.00
		DAM											
	1	219.1212	D95	0.1	1609.9	1609.9	1609.9	1609.9	0.023	0.5	0.2	10.8	0.68
	1	209.4033	D95	0.1	1608.8	1608.9	1608.9	1608.9	0.036	0.9	0.1	3.3	0.93
	1	197.6462	D95	0.1	1607.0	1607.1	0.0	1607.1	0.000	0.2	0.5	4.8	0.13
	1	178.6404	D95	0.1	1607.0	1607.1	1607.1	1607.1	0.039	1.3	0.1	1.7	1.03
	1	149.4387	D95	0.1	1605.0	1605.1	0.0	1605.1	0.001	0.2	0.5	9.3	0.15
	1	129.4051	D95	0.1	1605.0	1605.0	1605.0	1605.0	0.003	0.2	0.4	16.8	0.25
	1	89.91512	D95	0.1	1603.8	1603.9	1603.9	1603.9	0.038	0.9	0.1	3.8	0.95
	1	76.1522	D95	0.1	1603.0	1603.1	1603.1	1603.1	0.040	1.1	0.1	2.3	1.01
	1	30.23758	D95	0.1	1600.0	1601.0	1600.0	1601.0	0.000	0.0	19.4	25.1	0.00
	1	9.272341	D95	0.1	1601.0	1601.0	1601.0	1601.0	0.002	0.2	0.6	28.2	0.19

Existing Condition WSE (ft NAVD)	Proposed Condition WSE (ft NAVD)	Δ (ft)
1622.0	1622.0	0.0
1620.7	1620.7	0.0
1619.1	1619.1	0.0
1619.0	1618.0	-1.0
1619.0	1616.1	-2.9
1619.0	1616.0	-3.0
1619.0	1613.0	-6.0
1619.0	1611.0	-8.0
1619.0	1608.0	-11.0
1619.0	1607.1	-11.9
1609.9	1607.1	-2.8
1608.9	1607.1	-1.8
1607.1	1607.1	0.0
1607.1	1607.1	0.0
1605.1	1605.1	0.0
1605.0	1605.0	0.0
1603.9	1603.9	0.0
1603.1	1603.1	0.0
1601.0	1601.0	0.0
1601.0	1601.0	0.0

	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Proposed Condition	1	873.7751	D95	0.1	1622.0	1622.0	0.0	1622.0	0.007	0.4	0.3	10.3	0.41
	1	782.6332	D95	0.1	1620.6	1620.7	1620.7	1620.7	0.044	0.9	0.1	4.7	0.98
	1	719.1365	D95	0.1	1619.0	1619.1	0.0	1619.1	0.005	0.5	0.2	3.8	0.37
	1	617.6659	D95	0.1	1617.9	1618.0	1618.0	1618.0	0.042	1.1	0.1	2.3	1.03
	1	566.4481	D95	0.1	1616.0	1616.1	0.0	1616.1	0.000	0.2	0.4	3.6	0.12
	1	510.7805	D95	0.1	1616.0	1616.0	1616.0	1616.1	0.040	1.0	0.1	3.5	0.97
	1	430.2187	D95	0.1	1613.0	1613.0	1613.0	1613.0	0.021	0.6	0.2	6.5	0.68
	1	334.6249	D95	0.1	1611.0	1611.0	1611.0	1611.0	0.012	0.5	0.2	7.1	0.52
	1	248.6842	D95	0.1	1608.0	1608.0	1608.0	1608.0	0.005	0.3	0.3	11.7	0.34
	1	226.1339	D95	0.1	1607.0	1607.1	0.0	1607.1	0.002	0.4	0.2	2.0	0.23
		DAM											
	1	219.1212	D95	0.1	1607.0	1607.1	0.0	1607.1	0.001	0.4	0.3	2.4	0.19
	1	209.4033	D95	0.1	1607.0	1607.1	0.0	1607.1	0.000	0.2	0.6	5.5	0.08
	1	197.6462	D95	0.1	1607.0	1607.1	0.0	1607.1	0.000	0.2	0.5	4.8	0.12
	1	178.6404	D95	0.1	1607.0	1607.1	1607.1	1607.1	0.021	1.0	0.1	1.9	0.78
	1	149.4387	D95	0.1	1605.0	1605.1	0.0	1605.1	0.001	0.2	0.5	9.3	0.15
	1	129.4051	D95	0.1	1605.0	1605.0	1605.0	1605.0	0.003	0.2	0.4	16.8	0.25
	1	89.91512	D95	0.1	1603.8	1603.9	1603.9	1603.9	0.038	0.9	0.1	3.8	0.95
	1	76.1522	D95	0.1	1603.0	1603.1	1603.1	1603.1	0.040	1.1	0.1	2.3	1.01
	1	30.23758	D95	0.1	1600.0	1601.0	1600.0	1601.0	0.000	0.0	19.4	25.1	0.00
	1	9.272341	D95	0.1	1601.0	1601.0	1601.0	1601.0	0.002	0.2	0.6	28.2	0.19

Plan	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Existing Condition WSE (ft NAVD)	Proposed Condition WSE (ft NAVD)	Δ (ft)
Existing Condition	1	873.7751	D50	1	1622.0	1622.1	1622.1	1622.1	0.012	1.1	0.9	10.9	0.65	1622.1	1622.1	0.0
	1	782.6332	D50	1	1620.6	1620.8	0.0	1620.8	0.019	1.1	0.9	15.1	0.75	1620.8	1620.7	0.0
	1	719.1365	D50	1	1619.0	1619.2	1619.2	1619.2	0.035	1.9	0.5	5.8	1.09	1619.2	1619.2	0.1
	1	617.6659	D50	1	1618.0	1619.1	0.0	1619.1	0.000	0.1	16.0	27.4	0.01	1619.1	1618.1	-1.0
	1	566.4481	D50	1	1617.0	1619.1	0.0	1619.1	0.000	0.0	46.8	52.4	0.00	1619.1	1616.4	-2.7
	1	510.7805	D50	1	1618.0	1619.1	0.0	1619.1	0.000	0.0	56.1	79.1	0.00	1619.1	1616.1	-2.9
	1	430.2187	D50	1	1614.0	1619.1	0.0	1619.1	0.000	0.0	271.1	92.3	0.00	1619.1	1613.1	-6.0
	1	334.6249	D50	1	1612.3	1619.1	0.0	1619.1	0.000	0.0	506.4	99.1	0.00	1619.1	1611.1	-8.0
	1	248.6842	D50	1	1610.0	1619.1	0.0	1619.1	0.000	0.0	507.1	88.3	0.00	1619.1	1608.1	-11.0
	1	226.1339	D50	1	1613.3	1619.1	1613.6	1619.1	0.000	0.0	91.6	31.1	0.00	1619.1	1607.3	-11.7
		DAM														
	1	219.1212	D50	1	1609.9	1610.0	1610.0	1610.0	0.036	1.4	0.7	11.7	1.03	1610.0	1607.3	-2.6
	1	209.4033	D50	1	1608.8	1609.0	1609.0	1609.0	0.033	1.7	0.6	6.8	1.05	1609.0	1607.3	-1.6
	1	197.6462	D50	1	1607.0	1607.3	0.0	1607.3	0.001	0.6	1.8	7.8	0.20	1607.3	1607.3	0.0
	1	178.6404	D50	1	1607.0	1607.2	1607.2	1607.3	0.026	2.1	0.5	3.6	1.00	1607.2	1607.2	0.0
	1	149.4387	D50	1	1605.0	1605.2	0.0	1605.2	0.002	0.7	1.6	11.4	0.31	1605.2	1605.2	0.0
	1	129.4051	D50	1	1605.0	1605.1	0.0	1605.1	0.020	1.0	1.0	17.1	0.77	1605.1	1605.1	0.0
	1	89.91512	D50	1	1603.8	1604.0	1604.0	1604.0	0.036	1.6	0.6	9.0	1.06	1604.0	1604.0	0.0
	1	76.1522	D50	1	1603.0	1603.2	1603.2	1603.2	0.027	1.9	0.5	4.4	1.00	1603.2	1603.2	0.0
	1	30.23758	D50	1	1600.0	1601.1	1600.1	1601.1	0.000	0.1	20.4	25.5	0.01	1601.1	1601.1	0.0
	1	9.272341	D50	1	1601.0	1601.0	1601.0	1601.1	0.045	1.2	0.8	28.4	1.09	1601.0	1601.0	0.0

	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Proposed Condition	1	873.7751	D50	1	1622.0	1622.1	0.0	1622.1	0.007	0.9	1.1	11.0	0.51
	1	782.6332	D50	1	1620.6	1620.7	1620.7	1620.8	0.047	1.5	0.7	12.6	1.15
	1	719.1365	D50	1	1619.0	1619.2	0.0	1619.2	0.005	0.9	1.1	8.1	0.46
	1	617.6659	D50	1	1617.9	1618.1	1618.1	1618.2	0.029	1.8	0.6	5.4	1.01
	1	566.4481	D50	1	1616.0	1616.4	0.0	1616.4	0.001	0.7	1.4	4.0	0.22
	1	510.7805	D50	1	1616.0	1616.1	1616.1	1616.2	0.027	2.1	0.5	3.7	1.00
	1	430.2187	D50	1	1613.0	1613.1	1613.1	1613.1	0.013	1.3	0.8	6.6	0.69
	1	334.6249	D50	1	1611.0	1611.1	1611.1	1611.1	0.031	1.7	0.6	7.2	1.01
	1	248.6842	D50	1	1608.0	1608.1	1608.1	1608.1	0.023	1.3	0.8	11.8	0.84
	1	226.1339	D50	1	1607.0	1607.3	0.0	1607.4	0.005	1.5	0.7	2.3	0.47
		DAM											
	1	219.1212	D50	1	1607.0	1607.3	0.0	1607.4	0.004	1.2	0.8	2.6	0.39
	1	209.4033	D50	1	1607.0	1607.3	0.0	1607.3	0.001	0.5	1.9	6.0	0.17
	1	197.6462	D50	1	1607.0	1607.3	0.0	1607.3	0.001	0.6	1.8	7.8	0.20
	1	178.6404	D50	1	1607.0	1607.2	1607.2	1607.3	0.026	2.1	0.5	3.6	1.00
	1	149.4387	D50	1	1605.0	1605.2	0.0	1605.2	0.002	0.7	1.6	11.4	0.31
	1	129.4051	D50	1	1605.0	1605.1	0.0	1605.1	0.020	1.0	1.0	17.1	0.77
	1	89.91512	D50	1	1603.8	1604.0	1604.0	1604.0	0.036	1.6	0.6	9.0	1.06
	1	76.1522	D50	1	1603.0	1603.2	1603.2	1603.2	0.027	1.9	0.5	4.4	1.00
	1	30.23758	D50	1	1600.0	1601.1	1600.1	1601.1	0.000	0.1	20.4	25.5	0.01
	1	9.272341	D50	1	1601.0	1601.0	1601.0	1601.1	0.045	1.2	0.8	28.4	1.09

Plan	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Existing Condition WSE (ft NAVD)	Proposed Condition WSE (ft NAVD)	Δ (ft)
Existing Condition	1	873.7751	7Q2	0.11	1622.0	1622.0	1622.0	1622.0	0.007	0.4	0.3	10.3	0.41	1622.0	1622.0	0.0
	1	782.6332	7Q2	0.11	1620.6	1620.7	1620.7	1620.7	0.047	0.9	0.1	4.8	1.02	1620.7	1620.7	0.0
	1	719.1365	7Q2	0.11	1619.0	1619.0	1619.0	1619.1	0.091	1.4	0.1	2.6	1.46	1619.0	1619.1	0.0
	1	617.6659	7Q2	0.11	1618.0	1619.0	0.0	1619.0	0.000	0.0	14.6	26.5	0.00	1619.0	1618.0	-1.0
	1	566.4481	7Q2	0.11	1617.0	1619.0	0.0	1619.0	0.000	0.0	44.0	51.6	0.00	1619.0	1616.1	-2.9
	1	510.7805	7Q2	0.11	1618.0	1619.0	0.0	1619.0	0.000	0.0	51.9	78.1	0.00	1619.0	1616.0	-3.0
	1	430.2187	7Q2	0.11	1614.0	1619.0	0.0	1619.0	0.000	0.0	266.2	92.1	0.00	1619.0	1613.0	-6.0
	1	334.6249	7Q2	0.11	1612.3	1619.0	0.0	1619.0	0.000	0.0	501.1	98.9	0.00	1619.0	1611.0	-8.0
	1	248.6842	7Q2	0.11	1610.0	1619.0	0.0	1619.0	0.000	0.0	502.4	88.0	0.00	1619.0	1608.0	-11.0
	1	226.1339	7Q2	0.11	1613.3	1619.0	1613.4	1619.0	0.000	0.0	90.0	30.4	0.00	1619.0	1607.1	-11.9
		DAM														
	1	219.1212	7Q2	0.11	1609.9	1609.9	1609.9	1609.9	0.028	0.6	0.2	10.8	0.75	1609.9	1607.1	-2.8
	1	209.4033	7Q2	0.11	1608.8	1608.9	1608.9	1608.9	0.051	1.1	0.1	3.3	1.11	1608.9	1607.1	-1.8
	1	197.6462	7Q2	0.11	1607.0	1607.1	0.0	1607.1	0.000	0.2	0.5	4.9	0.13	1607.1	1607.1	0.0
	1	178.6404	7Q2	0.11	1607.0	1607.1	1607.1	1607.1	0.040	1.3	0.1	1.8	1.05	1607.1	1607.1	0.0
	1	149.4387	7Q2	0.11	1605.0	1605.1	0.0	1605.1	0.001	0.2	0.5	9.3	0.18	1605.1	1605.1	0.0
	1	129.4051	7Q2	0.11	1605.0	1605.0	1605.0	1605.0	0.003	0.3	0.4	16.8	0.27	1605.0	1605.0	0.0
	1	89.91512	7Q2	0.11	1603.8	1603.9	1603.9	1603.9	0.049	1.0	0.1	3.7	1.07	1603.9	1603.9	0.0
	1	76.1522	7Q2	0.11	1603.0	1603.1	1603.1	1603.1	0.047	1.2	0.1	2.3	1.10	1603.1	1603.1	0.0
	1	30.23758	7Q2	0.11	1600.0	1601.0	1600.0	1601.0	0.000	0.0	19.4	25.1	0.00	1601.0	1601.0	0.0
	1	9.272341	7Q2	0.11	1601.0	1601.0	1601.0	1601.0	0.002	0.2	0.6	28.2	0.21	1601.0	1601.0	0.0

	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Proposed Condition	1	873.7751	7Q2	0.11	1622.0	1622.0	0.0	1622.0	0.007	0.4	0.3	10.3	0.41
	1	782.6332	7Q2	0.11	1620.6	1620.7	1620.7	1620.7	0.047	0.9	0.1	4.8	1.02
	1	719.1365	7Q2	0.11	1619.0	1619.1	0.0	1619.1	0.005	0.5	0.2	3.9	0.38
	1	617.6659	7Q2	0.11	1617.9	1618.0	1618.0	1618.0	0.039	1.1	0.1	2.5	1.00
	1	566.4481	7Q2	0.11	1616.0	1616.1	0.0	1616.1	0.000	0.2	0.5	3.6	0.12
	1	510.7805	7Q2	0.11	1616.0	1616.0	1616.0	1616.1	0.059	1.1	0.1	3.5	1.17
	1	430.2187	7Q2	0.11	1613.0	1613.0	0.0	1613.0	0.019	0.6	0.2	6.5	0.66
	1	334.6249	7Q2	0.11	1611.0	1611.0	1611.0	1611.0	0.014	0.5	0.2	7.1	0.57
	1	248.6842	7Q2	0.11	1608.0	1608.0	1608.0	1608.0	0.006	0.4	0.3	11.7	0.37
	1	226.1339	7Q2	0.11	1607.0	1607.1	0.0	1607.1	0.002	0.5	0.2	2.0	0.24
		DAM											
	1	219.1212	7Q2	0.11	1607.0	1607.1	0.0	1607.1	0.001	0.4	0.3	2.4	0.20
	1	209.4033	7Q2	0.11	1607.0	1607.1	0.0	1607.1	0.000	0.2	0.7	5.5	0.09
	1	197.6462	7Q2	0.11	1607.0	1607.1	0.0	1607.1	0.000	0.2	0.5	4.9	0.13
	1	178.6404	7Q2	0.11	1607.0	1607.1	1607.1	1607.1	0.026	1.1	0.1	1.9	0.85
	1	149.4387	7Q2	0.11	1605.0	1605.1	0.0	1605.1	0.001	0.2	0.5	9.3	0.18
	1	129.4051	7Q2	0.11	1605.0	1605.0	1605.0	1605.0	0.003	0.3	0.4	16.8	0.27
	1	89.91512	7Q2	0.11	1603.8	1603.9	1603.9	1603.9	0.049	1.0	0.1	3.7	1.07
	1	76.1522	7Q2	0.11	1603.0	1603.1	1603.1	1603.1	0.047	1.2	0.1	2.3	1.10
	1	30.23758	7Q2	0.11	1600.0	1601.0	1600.0	1601.0	0.000	0.0	19.4	25.1	0.00
	1	9.272341	7Q2	0.11	1601.0	1601.0	1601.0	1601.0	0.002	0.2	0.6	28.2	0.21

Plan	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Existing Condition WSE (ft NAVD)	Proposed Condition WSE (ft NAVD)	Δ (ft)
Existing Condition	1	873.7751	7Q10	0.06	1622.0	1622.0	1622.0	1622.0	0.003	0.2	0.3	10.3	0.28	1622.0	1622.0	0.0
	1	782.6332	7Q10	0.06	1620.6	1620.7	1620.7	1620.7	0.017	0.5	0.1	4.7	0.62	1620.7	1620.7	0.0
	1	719.1365	7Q10	0.06	1619.0	1619.0	1619.0	1619.1	0.042	0.9	0.1	2.5	0.98	1619.0	1619.1	0.0
	1	617.6659	7Q10	0.06	1618.0	1619.0	0.0	1619.0	0.000	0.0	14.6	26.5	0.00	1619.0	1618.0	-1.0
	1	566.4481	7Q10	0.06	1617.0	1619.0	0.0	1619.0	0.000	0.0	44.0	51.6	0.00	1619.0	1616.1	-2.9
	1	510.7805	7Q10	0.06	1618.0	1619.0	0.0	1619.0	0.000	0.0	51.9	78.1	0.00	1619.0	1616.0	-3.0
	1	430.2187	7Q10	0.06	1614.0	1619.0	0.0	1619.0	0.000	0.0	266.2	92.0	0.00	1619.0	1613.0	-6.0
	1	334.6249	7Q10	0.06	1612.3	1619.0	0.0	1619.0	0.000	0.0	501.0	98.9	0.00	1619.0	1611.0	-8.0
	1	248.6842	7Q10	0.06	1610.0	1619.0	0.0	1619.0	0.000	0.0	502.4	88.0	0.00	1619.0	1608.0	-11.0
	1	226.1339	7Q10	0.06	1613.3	1619.0	1613.4	1619.0	0.000	0.0	90.0	30.4	0.00	1619.0	1607.1	-11.9
		DAM														
	1	219.1212	7Q10	0.06	1609.9	1609.9	1609.9	1609.9	0.008	0.3	0.2	10.8	0.41	1609.9	1607.1	-2.8
	1	209.4033	7Q10	0.06	1608.8	1608.9	1608.9	1608.9	0.047	0.9	0.1	2.9	1.02	1608.9	1607.1	-1.8
	1	197.6462	7Q10	0.06	1607.0	1607.1	0.0	1607.1	0.000	0.2	0.3	4.4	0.12	1607.1	1607.1	0.0
	1	178.6404	7Q10	0.06	1607.0	1607.1	1607.1	1607.1	0.036	1.0	0.1	1.6	0.95	1607.1	1607.0	0.0
	1	149.4387	7Q10	0.06	1605.0	1605.0	0.0	1605.0	0.001	0.2	0.4	9.0	0.16	1605.0	1605.0	0.0
	1	129.4051	7Q10	0.06	1605.0	1605.0	1605.0	1605.0	0.001	0.1	0.4	16.8	0.15	1605.0	1605.0	0.0
	1	89.91512	7Q10	0.06	1603.8	1603.9	1603.9	1603.9	0.037	0.8	0.1	3.1	0.90	1603.9	1603.9	0.0
	1	76.1522	7Q10	0.06	1603.0	1603.0	1603.0	1603.1	0.123	1.4	0.0	1.9	1.63	1603.0	1603.0	0.0
	1	30.23758	7Q10	0.06	1600.0	1601.0	1600.0	1601.0	0.000	0.0	19.4	25.1	0.00	1601.0	1601.0	0.0
	1	9.272341	7Q10	0.06	1601.0	1601.0	1601.0	1601.0	0.001	0.1	0.6	28.2	0.11	1601.0	1601.0	0.0

	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Proposed Condition	1	873.7751	7Q10	0.06	1622.0	1622.0	0.0	1622.0	0.005	0.3	0.2	10.3	0.33
	1	782.6332	7Q10	0.06	1620.6	1620.7	1620.7	1620.7	0.161	1.2	0.1	3.5	1.73
	1	719.1365	7Q10	0.06	1619.0	1619.1	0.0	1619.1	0.006	0.5	0.1	3.2	0.38
	1	617.6659	7Q10	0.06	1617.9	1618.0	1618.0	1618.0	0.027	0.9	0.1	2.0	0.81
	1	566.4481	7Q10	0.06	1616.0	1616.1	0.0	1616.1	0.000	0.2	0.4	3.6	0.10
	1	510.7805	7Q10	0.06	1616.0	1616.0	1616.0	1616.0	0.028	0.7	0.1	3.5	0.79
	1	430.2187	7Q10	0.06	1613.0	1613.0	1613.0	1613.0	0.008	0.4	0.2	6.5	0.42
	1	334.6249	7Q10	0.06	1611.0	1611.0	1611.0	1611.0	0.004	0.3	0.2	7.1	0.31
	1	248.6842	7Q10	0.06	1608.0	1608.0	1608.0	1608.0	0.002	0.2	0.3	11.7	0.20
	1	226.1339	7Q10	0.06	1607.0	1607.1	0.0	1607.1	0.001	0.3	0.2	1.9	0.20
		DAM											
	1	219.1212	7Q10	0.06	1607.0	1607.1	0.0	1607.1	0.001	0.3	0.2	2.4	0.16
	1	209.4033	7Q10	0.06	1607.0	1607.1	0.0	1607.1	0.000	0.1	0.5	5.5	0.07
	1	197.6462	7Q10	0.06	1607.0	1607.1	0.0	1607.1	0.000	0.2	0.3	4.5	0.11
	1	178.6404	7Q10	0.06	1607.0	1607.0	1607.0	1607.1	0.047	1.1	0.1	1.5	1.07
	1	149.4387	7Q10	0.06	1605.0	1605.0	0.0	1605.0	0.001	0.2	0.4	9.0	0.16
	1	129.4051	7Q10	0.06	1605.0	1605.0	1605.0	1605.0	0.001	0.1	0.4	16.8	0.15
	1	89.91512	7Q10	0.06	1603.8	1603.9	1603.9	1603.9	0.037	0.8	0.1	3.1	0.90
	1	76.1522	7Q10	0.06	1603.0	1603.0	1603.0	1603.1	0.123	1.4	0.0	1.9	1.63
	1	30.23758	7Q10	0.06	1600.0	1601.0	1600.0	1601.0	0.000	0.0	19.4	25.1	0.00
	1	9.272341	7Q10	0.06	1601.0	1601.0	1601.0	1601.0	0.001	0.1	0.6	28.2	0.11

Appendix F - Cost Opinion

Becker Pond Dam Removal

Engineer's Opinion of Probable Construction Cost
Revised 75% Design Submittal
9/14/2020

Base Bid Items

No.	Item	Quantity	Unit	Unit Cost	Total Cost	Notes
1	Mobilization & Demobilization	1	LS	$ 24,900	$ 24,900	20% of other items. Includes clearing and grubbing along existing access route and dam site as required.
2	Flow Management, Erosion and Pollution Control	1	LS	$ 5,000	$ 5,000	Silt fence, miscellaneous erosion control activities
3	Dam Demolition and Disposal	1	LS	$ 75,000	$ 75,000	Includes excavation and fill below proposed contours as necessary to remove full vertical extent of dam, removal and breaking up of concrete, and offsite disposal of concrete
4	Earthwork	525	CY	$ 20	$ 10,500	Total cut of earthen material for pilot channel excavation and grading of embankment and banks. Assumes on-site reuse (incidental).
5	Access Road	0.6	AC	$ 20,000	$ 12,000	Clearing and grubbing along Access Entrance Alternative 2. Assumes no material import or construction and that cleared vegetation will be left on site.
6	Surface Fabric	330	SY	$ 15	$ 5,000	Surface fabric as required to cover disturbed banks within limits shown on the Plans
7	Seeding	1	AC	$ 8,000	$ 8,000	Includes all exposed surfaces within limits of disturbance associated with dam removal operations, former impoundment, and approximately half of the width of Access Entrance Alternative 2
8	Planting - 3 gal trees	30	EA	$ 150	$ 4,500	Native plantings within the limits shown on the Plans and along Access Entrance Alternative 2
9	Planting - 2 gal shrubs	60	EA	$ 75	$ 4,500	Native plantings within the limits shown on the Plans and along Access Entrance Alternative 2
				Subtotal	$ 149,400	
				Contingency (20%)	$ 29,900	
				Total	**$ 179,300**	

No.	Additive Items	Quantity	Unit	Unit Cost	Total Cost	Notes
A1	Earthwork Offsite Disposal	525	CY	$ 50	$ 26,250	Assumes no special landfill disposal and beneficial reuse

AC = Acre
CY = Cubic Yards
EA = Each
LS = Lump Sum
SY = Square Yards

Attachment E

Becker Pond Dam Removal Project
Mt Washington, MA
SEIR - EEA File #16226

CONSTRUCTION BEST MANAGEMENT PRACTICES (BMPS)

SECTION 02100 – FLOW MANAGEMENT, EROSION AND POLLUTION CONTROL

PART 1 - GENERAL

1.1 SUMMARY

A. Section Addresses:
  1. Minimizing the pollution of air, water, or land; control of noise; the disposal of solid waste materials.
  2. Employ and utilize environmental protection methods, and fully comply with all local, state, and federal regulations and permits.

B. Section Includes:
  1. Flow management, erosion and pollution control consisting of providing construction operations that avoid or minimize damage to adjacent or resident natural resources, and water, air and noise pollution.

1.2 QUALITY ASSURANCE

A. Referenced Standards
  1. Flow Management, Erosion and Pollution Control shall be performed in accordance with the permits and their requirements (see Section - 00820 Permits).
  2. MassDOT Standards Specifications and Supplements (MHD) – latest edition

1.3 SUBMITTALS

A. The Contractor shall submit a Spill Prevention Plan to the Engineer for approval as part of the Construction Operations Plan prior to the preconstruction conference. The plan shall include a procedure for reporting incidents to Mass DEP.

B. Water Management Plan
  1. The Contractor shall submit a Water Management Plan to the Engineer for approval as part of the Construction Operations Plan prior to the preconstruction conference. An approved plan must be in place prior to the start of work.
  2. The Water Management Plan shall include:
    a. A narrative of the methods to be used to control water;
    b. A complete list of equipment and materials to be used and a schedule for their delivery and installation at the site;
    c. Location of facilities;
    d. Provisions for addressing circumstances resulting from overtopping of flow management works due to wet weather conditions;
    e. Provisions for treatment of water pumped from within the immediate work area; and
    f. A flood response plan that sets out procedures for evacuating all workers, equipment, materials, etc. from the work area and for stabilizing and protecting the area to the greatest extent possible prior to the onset of flooding. Any flood emergency warning and response procedures must be identified. The plan must set

procedures and protective measures to be implemented in the event of a flood during dam breach construction activities.

3. Sheet XX of the Contract Drawings provides a suggested construction sequence, including flow management, for the purposes of project bidding. The Contractor may follow the suggested sequencing or provide an alternate plan. Overall, the plan will be the Contractor's plan that meets all permit requirements and is subject to approval by the Engineer.

C. Erosion and Pollution Control Plan
   1. The Contractor shall submit an Erosion and Pollution Control Plan for the project to the Engineer for review and approval. The Erosion and Pollution Control Plan must satisfy the requirements of the NPDES Stormwater General Permit for Construction Activity and all other applicable permits.
   2. The plan shall include a drawing of the work area, haul routes, storage areas, access routes and current land conditions including trees and vegetation.
   3. The Engineer must approve this plan prior to the start of work.
   4. The plan shall include the name, address and 24-hour contact number of the person responsible for erosion and pollution prevention and control measures.

PART 2 - PRODUCTS

2.1 EQUIPMENT

A. Management of in-stream flows shall use temporary dams or exclusion barriers, gravity or pumped diversion pathways, or other methods that allow the Work to be completed in compliance with applicable permits and have been approved by the Owner.

2.2 MATERIALS

A. Oil Absorbent Booms
   1. Shall be 5-inch, minimum, diameter and constructed of an outer mesh that contains oil absorbent filler material.
   2. Shall be capable of absorbing all hydrocarbons including, oil, gasoline, diesel and lubricating oils.
   3. Shall not sink when saturated with oil.

B. Silt Fence
   1. Silt fence shall be provided as required to protect surface water quality and comply with all permits.

C. Bulk Bags
   1. Bulk bags, if necessary to complete the Work, shall be constructed of woven polypropylene fabric. Bulk bags shall have a minimum capacity of 3,000 lbs and shall be spread strap containers with 28-inch by 28-inch bases as manufactured by Bag Corp., or approved equal.

D. Woven Coir Fabric, Wood Stakes, and Wood Staples
   1. Refer to Section 02200 – Earthwork for specifications

PART 3 - EXECUTION

3.1 CONSTRUCTION

A. General Construction Requirements

1. No work requiring erosion control shall commence until the Erosion and Pollution Control Plan has been submitted and approved by the Owner and any required permits are in place.
2. The Contractor shall furnish, install, maintain and remove erosion and sediment control devices over the lifetime of the Project. If any of the installed measures require repair or are rendered ineffective during construction, these measures shall be replaced or repaired by the Contractor and brought back to effective condition at no extra cost

3.2 PROTECTION OF PROPERTY

A. Land Protection

1. Except for any work or storage area and access routes specifically assigned for the use of the Contractor, the areas outside the limits of construction shall be preserved in their present condition. Contractor shall confine his activities to areas shown on the Drawings.
2. Contractor shall manage and control all borrow areas, work or storage areas, access routes and embankments to prevent water from entering nearby water or land adjacent to the work site.
3. Contractor shall restore all disturbed areas including borrow and haul areas and establish permanent type of locally adaptive vegetative cover.
4. Unless earthwork is immediately paved or surfaced, Contractor shall protect all side slopes and backslopes immediately upon completion of final grading.
5. Plan and execute earthwork in a manner to minimize duration of exposure of unprotected soils.
6. Except for areas designated by the Contract Documents to be cleared, the Contractor shall not deface, injure or destroy trees and vegetation, nor remove, cut, or disturb them without approval of the Owner. Any damage caused by the Contractor's equipment or operations shall be restored to its original condition at the Contractor's expense.
7. Silt fence shall be installed prior to clearing and grubbing to control sediment from leaving the project limits. The Contractor may submit alternate methods of establishing perimeter sediment control in locations where silt fence installation is deemed impractical or problematic. The Contractor shall not make this substitution without prior approval of the Engineer.
8. The Contractor shall be responsible for the removal of temporary erosion control measures once the project is completed.
9. All disturbed areas shall be treated as shown on the Drawings or described in these specifications.

B. Project Access, Staging and Storage Areas

1. Access corridor and potential staging and storage areas are shown on the Drawings, and will be reviewed in the field by the Owner. The Contractor shall be responsible for any repairs, replacement or payment required to return any vegetation, structures, grading or other facilities disturbed in the course of this project by the Contractor, his employees or subcontractors, to the same condition as existed before the project was started. Such repairs, replacement or payment shall be at the Contractor's expense.

C. Haul Routes
  1. The Contractor is required to determine and observe any restrictions placed on travel over public roads.
  2. The Contractor shall be responsible for any repairs, replacement or payment required to return public roads damaged in the course of this project by the Contractor, his employees or subcontractors, to the same condition as existed before the project was started. Such repairs, replacement or payment shall be at the Contractor’s expense.
  3. The Contractor shall be responsible for limiting spillage of spoils and other impacts from passage of haul vehicles and other operations to comply with road use requirements and to ensure a safe operating environment.

3.3 FLOW MANAGEMENT

A. The Contractor shall perform water management in excavations and other work locations as necessary to facilitate completion of the work.

B. The water management facilities shall be sufficient to bypass or exclude the watercourse from the active work area and to protect the work in progress.

C. The Contractor shall provide all equipment and materials necessary for water management. The Contractor shall have on hand, at all times, sufficient pumping and other equipment and machinery in good working condition and shall have available, at all times, competent workers for the operation of equipment.

D. The Contractor shall be responsible for installation, maintenance and performance of the water management works. All materials used for construction of temporary flow management structures shall be clean and stable.

E. The Contractor shall be aware that the project site is in a waterway and the Contractor is responsible for monitoring incoming weather and flow levels to protect equipment and the site accordingly.

3.4 EROSION AND POLLUTION CONTROL

A. The provisions shown on the approved Erosion and Pollution Control Plan shall be in place prior to any ground disturbing activity on the site.

B. The Contractor shall perform erosion control for the duration of the Contract in accordance with the approved Erosion and Pollution Control Plan or otherwise approved by the Owner.

C. Control of Dust
  1. The control of dust shall mean that no construction activity shall take place without applying all such reasonable measures as may be required to prevent particulate matter from becoming airborne so this it remains visible beyond the limits of construction. Reasonable measures may include paving, frequent road cleaning, planting vegetative groundcover, application of water or application of chemical dust suppressants. Utilize methods and practices of construction to eliminate dust.
  2. The Engineer will determine the effectiveness of the dust control program and may request the Contractor to provide additional measures, at no additional cost to the Owner.

D. Control of surface runoff shall include operations adequate to bypass or remove all flowing water. The Contractor shall be responsible for performing dewatering in accordance with the requirements of all applicable permits.
   1. Utilize methods necessary to effectively prevent erosion and control of sedimentation and include the following:
      a. Mechanically retard rate of runoff by construction of diversion ditches, terraces, and berms. Divert runoff to protect drainage courses.
      b. Protect side and backslopes as soon as rough grading is complete by mulching or netting.
      c. Where slopes are too steep for stabilization, use mulching anchored in place, covered by woven coir fabric that is secured with wooden stakes and staples to prevent erosion.
      d. Remove temporary protection prior to final grading operations.
      e. Install woven coir fabric secured with wooden stakes and staples immediately upon completion of final grading operations. Refer to Section 02200 – Earthwork.

E. It shall be the sole responsibility of the Contractor to control the rate and effect of the water management and erosion control in such a manner as to avoid all objectionable settlement, subsidence or erosion caused by discharge flows, and to mitigate impacts to the watercourse, including fish and wildlife resources. All materials used for dewatering shall be clean and stable. No materials that can be washed away by stream flows, such as topsoil, sand or fine gravel, will be allowed.

F. Solid Waste Disposal
   1. Collect solid waste on a daily basis.
   2. Provide disposal of degradable solid waste to an approved solid waste disposal site.
   3. Provide disposal of nondegradable solid waste to an approved solid waste disposal site or in an alternative manner approved by Owner and regulatory agencies.

G. Control of Chemical Waste
   1. Store and dispose of chemical wastes in a manner approved by regulatory agencies.
   2. Take special measures to prevent chemicals, fuels, oils, greases, herbicides, and insecticides from entering drainage ways.
   3. Do not allow water used in onsite material processing, concrete curing, cleanup, and other waste waters to enter drainage way(s) or stream(s).

H. Burning
   1. Do not burn material on site. If the Contractor elects to dispose of waste material by burning, make arrangements for an offsite burning area and conform to all agency regulations.

I. Control of Noise
   1. Control of noise by fitting equipment with appropriate mufflers.

3.5 REMOVAL OF FACILITIES AND SUPPLIES

A. Following the conclusion of project construction and upon approval of the Engineer, the flow management and erosion control facilities and materials shall be removed, and the areas impacted by these operations shall be restored to their original condition. Materials used in water management and erosion control activity shall become property of the Contractor and removed from the site at his sole expense.

B. Completion of Work
1. Upon completion of work, leave area in a clean, natural looking condition.
2. Ensure all signs of temporary construction and activities incidental to construction of required permanent work are removed upon completion of the Work.
3. Grade, fill and seal disturbed area.

END OF SECTION 02100

The Nature Conservancy Approaches to Invasive Plant Species Management in Wetland Resource Areas

The Nature Conservancy (TNC) has been using invasive plant control methods in the southern Berkshires for over 15 years, with documented success at both controlling invasive plants and minimizing non-target impacts. Monitoring treatment success is performed through the use of vegetation monitoring plots, photo monitoring, and pre and post treatment site inspections and evaluations. All herbicide applications are performed by TNC staff, volunteers, or contractors who hold valid pesticide application licenses issued by the Commonwealth of Massachusetts.

TNC has worked to manage and control several invasive plant species including, but not limited to, *Phragmites australis* (Common reed), *Lythrum salicaria* (Purple Loosestrife), *Phalaris arundinacea* (Reed canarygrass), *Berberis thunbergii* (Barberry), *Rhamnus cathartica* and *R. frangula* (Buckthorn), *Lonicera* spp. (Honeysuckle), *Celastrus orbiculata* (Oriental Bittersweet) and *Rosa multiflora* (Multiflora rose). Preferred and alternative methods of control for these invasive plants within and around wetland resources areas are as follows:

Common reed (*Phragmites australis*)

Preferred methods of treatment: Hand-clip Phragmites at chest height and apply an approved herbicide to the hollow stems in August through September, or swipe stems with a glove coated with herbicide in mid-July.
Alternative: Apply a foliar treatment of herbicide in mid-July.

Reed canarygrass (*Phalaris arundinacea*)

Preferred method of treatment: Mow during early summer, and apply a foliar herbicide during late summer.
Alternative: Mow up to 4 times during the growing season.

Purple loosestrife (*Lythrum salicaria*)

Preferred method of treatment: Apply a biological control with *Galerucella* spp. beetles.
Alternative: Apply a foliar herbicide through hand swiping.

Barberry (*Berberis thunbergii*), multiflora rose (*Rosa multiflora*), bittersweet (*Celastrus orbiculatus*), and honey suckle (*Lonicera spp.*)

Preferred method of treatment: Apply foliar herbicide, or use a combination of mechanical cutting and herbicide application to the cut stems or stumps.
Alternative: Remove individual plants by hand.

Buckthorn (*Frangula spp.*)

Preferred method of treatment: Mechanically cut and apply herbicide to the cut stumps.
Alternative: Remove individual plants by hand.

Japanese Stiltgrass (*Microstegium vineum*)

Preferred method of treatment: Mechanically cut in late summer but before seeds mature.
Alternative: Remove individual plants by hand.

Our preferred herbicide for use in all habitat types is glyphosate (53.8% active ingredient glyphosate N-(phosphonomethyl) glycine, isopropylamine salt). This product is approved by the Commonwealth of Massachusetts for use within wetlands and it does not come pre-mixed with any surfactants. When working directly in wetland resource areas we prefer to use a glyphosate herbicide without any additional surfactants, which requires a direct application of the glyphosate herbicide either onto/into a cut stump/stem. However, some site conditions require a foliar application of a glyphosate herbicide, and those circumstances will require the addition of a surfactant to the herbicide mixture. Our preferred surfactant is Cide-Kick™ II, which is made of natural limonene taken from the bark of pine trees. It is used in foliar applications because it breaks down the waxy cuticle of the plants, allowing better uptake of the herbicide.

The coloring agent Bullseye™ is added to all herbicide mixes. This allows applicators to see areas that have already been treated, therefore greatly reducing the chances of over application. This is our preferred coloring agent because it is non-toxic, environmentally safe, water soluble, and does not permanently stain clothing or equipment.

As stated above, all herbicide applications are performed by licensed TNC staff, volunteers, or contractors the Commonwealth of Massachusetts. In addition, all herbicide applications are performed in compliance with their respective labels and under the strictest protocols to minimize non-target impacts. These practices include the following protocols:

- To minimize runoff, herbicide will not be applied when there is greater than a 50% chance of rain within 8 hours following application.
- To reduce the risk of drift, foliar applications, via low pressure backpack sprayers, will only occur when wind speeds are between 2 to 10 mph. In additional, drift will be minimized by avoiding foliar applications during periods of temperature inversion.
- Evaporation will be mitigated by avoiding application during the hottest and driest days.

For further information contact Angela Sirois-Pitel, TNC Western Massachusetts Stewardship Manager, asirois@tnc.org, (413) 229-0232.

Attachment F

Becker Pond Dam Removal Project
Mt Washington, MA
SEIR - EEA File #16226

NHESP CONSULTATION

From:	Sarah Barnum
Sent:	Tuesday, May 11, 2021 12:07 PM
To:	Alderton, Emily
Subject:	FW: Mount Washington, Becker Pond dam - NHESP 18-37448

Emily,

See below for NHESP consultation info. This e-mail should be referenced and included in the Appendices.

Sarah

From: Karen Lombard <klombard@TNC.ORG>
Sent: Tuesday, May 11, 2021 12:01 PM
To: Sarah Barnum <SBarnum@bscgroup.com>
Cc: Ford, Eric (FWE) <eric.ford@state.ma.us>; Wildman, Nick (FWE) <nick.wildman@state.ma.us>; Fontaine, Leanda (FWE) <leanda.fontaine@state.ma.us>; Hirsch, Chris (FWE) <chris.hirsch@state.ma.us>
Subject: FW: Mount Washington, Becker Pond dam - NHESP 18-37448

Heritage email demonstrating that we are in consultation below.

From: Marold, Misty-Anne (FWE) <misty-anne.marold@state.ma.us>
Sent: Tuesday, May 11, 2021 9:51 AM
To: Karen Lombard <klombard@TNC.ORG>
Cc: Cheeseman, Melany (FWE) <melany.cheeseman@state.ma.us>
Subject: RE: Mount Washington, Becker Pond dam - NHESP 18-37448

RE: Becker Pond dam - NHESP 18-37448, plan change

Karen,

Thanks for the information about the change to the proposed access road. The existing road is 10-12 feet wide, but TNC has not been able to obtain approval for use of this road fo the proposed dam removal project. So, TNC proposes to construct a new 15 foot access road to facilitate construction. The new access road will be about 300 ft long with the intention of minimizing tree cutting and gravel application resulting in about 4500 square-feet of additional disturbance. As discussed in prior consultation, TNC will narrow the road to a hiking trail post-construction.

The Division anticipates that this additional work will not require a MESA Conservation and Management Permit pursuant to 321 CMR 10.23 based on the information available at this time. The project will need to file for a formal MESA Review pursuant to 321 CMR 10.18 after the completion of the MEPA Review process (boiler-plate filing language below). I anticipate that the project can be conditioned, as previously discussed, pursuant to 321 CMR 10.18. This includes implementation of a protection plan and taking opportunities for habitat enhancement in the vicinity of the dam.

Best, Misty-Anne

Wetlands Protection Act (WPA)

Attachment G

Becker Pond Dam Removal Project
Mt Washington, MA
SEIR - EEA File #16226

HISTORIC AND CULTURAL CONSULTATION

RECEIVED

APR 01 2019

MASS. HIST. COM

RC.66155

950 CMR: OFFICE OF THE SECRETARY OF THE COMMONWEALTH

APPENDIX A
MASSACHUSETTS HISTORICAL COMMISSION
220 MORRISSEY BOULEVARD
BOSTON, MASS. 02125
617-727-8470, FAX: 617-727-5128

PROJECT NOTIFICATION FORM

Project Name: Becker Pond Dam Removal

Location / Address: East St. 42.059476°N, -73.460018°W

City / Town: Mt. Washington, MA

Project Proponent

Name: The Nature Conservancy (attn: Karen Lombard)

Address: 136 West St. Suite 202

City/Town/Zip/Telephone: Northampton, MA 01060 / 413-923-3174

Agency license or funding for the project (list all licenses, permits, approvals, grants or other entitlements being sought from state and federal agencies).

Agency Name | Type of License or funding (specify)

see attached project description

Project Description (narrative):

see attached

Does the project include demolition? If so, specify nature of demolition and describe the building(s) which are proposed for demolition.

Yes, dam removal

Does the project include rehabilitation of any existing buildings? If so, specify nature of rehabilitation and describe the building(s) which are proposed for rehabilitation.

NA

Does the project include new construction? If so, describe (attach plans and elevations if necessary).

NA

After review of MHC files and the materials you submitted, it has been determined that this project is unlikely to affect significant historic or archaeological resources.

Nadia Waski 4.24.19

Nadia Waski
Preservation Planner
Massachusetts Historical Commission

Date

5/31/96 (Effective 7/1/93) - corrected

APPENDIX A (continued)

To the best of your knowledge, are any historic or archaeological properties known to exist within the project's area of potential impact? If so, specify.

No

What is the total acreage of the project area? new access road

Woodland .002 acres
Wetland .65 acres acres
Floodplain NA acres
Open space NA acres
Developed NA acres

Productive Resources:
Agriculture NA acres
Forestry NA acres
Mining/Extraction NA acres
Total Project Acreage NA acres

What is the acreage of the proposed new construction? NA acres

What is the present land use of the project area?

nature preserve

Please attach a copy of the section of the USGS quadrangle map which clearly marks the project location.

see project descripton

This Project Notification Form has been submitted to the MHC in compliance with 950 CMR 71.00.

Signature of Person submitting this form: Date: 3/28/19
Name: Karen Lombard
Address: The Nature Conservancy, 136 West St. Suite 202
City/Town/Zip: Northampton, MA 01060
Telephone: 413-923-3174

REGULATORY AUTHORITY

950 CMR 71.00: M.G.L. c. 9, §§ 26-27C as amended by St. 1988, c. 254.

Alderton, Emily

From: Bonney Hartley <Bonney.Hartley@mohican-nsn.gov>
Sent: Monday, April 1, 2019 12:31 PM
To: Karen Lombard
Subject: RE: Becker Pond Dam Removal PNF - Mt. Washington, MA

Hi Karen,
I do not see significant cultural resource concern with the proposed project. Stockbridge Munsee Community asks to be notified in the case of any inadvertent discoveries during the activities.
Thank you,
Bonney

Bonney Hartley
Tribal Historic Preservation Officer
Stockbridge-Munsee Mohican Tribal Historic Preservation
Extension office
65 1st Street
Troy, NY 12180
(518) 244-3164
Bonney.Hartley@mohican-nsn.gov
www.mohican-nsn.gov

From: Karen Lombard <klombard@TNC.ORG>
Sent: Thursday, March 28, 2019 2:20 PM
To: victor.mastone@state.ma.us; bettina@wampanoagtribe.net; rpeters@mwtribe.com; Bonney Hartley <Bonney.Hartley@mohican-nsn.gov>
Subject: Becker Pond Dam Removal PNF - Mt. Washington, MA

Please see the attached notification for a dam removal on Nature Conservancy land in Mt. Washington, MA. Please let me know if you have any questions.

Please consider the environment before printing this email.

Karen Lombard
Director of Stewardship & Restoration
klombard@tnc.org
(413) 923-3174 (Office)
(617) 699-2438 (Mobile)

nature.org

The Nature Conservancy
Massachusetts Field Office

136 West St., Suite 202
Northampton, MA 01060

The Nature Conservancy