REMOVAL OF THE COLUMBIA MILL DAM, LEE, MASSACHUSETTS
Site Reconnaissance and Cost Estimates

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MASSACHUSETTS RIVERWAYS PROGRAM
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1.0 COLUMBIA MILL DAM

This report presents information relevant to potential restoration associated with removal of the Columbia Mill Dam on the Housatonic River in the Town of Lee, Massachusetts. The Dam is owned by the Schweitzer-Mauduit International, Inc. (SMII). Removal of the Dam would eliminate an anthropogenic impediment to movement of resident fishes on the Housatonic River and restore riverine conditions within the existing impoundment.

The Housatonic River currently supports populations of native and non-native fish, including largemouth bass (*Mictropterus salmoides*), rock bass (*Ambloplites rupestris*), smallmouth bass (*Mictpterus dolomieui*), bluegill sunfish (*Lepomis macrochirus*), brown bullhead (*Ameiurs nebulosus*), black crappie (*Pomoxis nigromaculatus*), blacknose dace (*Rhimichthys atratulus*), longnose dace (*Rhinichthys cataractae*), fallfish (*Semotilus corporalis*), bluntnose minnow (*Pimephales notatus*), yellow perch (*Perca flavescens*), chain pickerel (*Esox niger*), northern pike (*Esox lucius*), pumpkinseed sunfish (*Lepomis gibbosus*), bridle shiner (*Notropis bifrenatus*), common shiner (*Luxilus cornutus*), golden shiner (*Notemigonus crysoleucas*), spottail shiner (*Notropis hudsonius*), white sucker (*Catostomus commersoni*), longnose sucker (*Catostomus catostomus*), brook trout (*Salvelinus fontinalis*), brown trout (*Salmo trutta*), and rainbow trout (*Salmo gairdneri*). The bridle shiner and longnose sucker are both listed as species of concern under the Massachusetts Division of Fisheries and Wildlife Natural Heritage and Endangered Species Program. The current Dam configuration affords no viable upstream fish passage opportunities.

1.1 GENERAL SITE CONDITIONS

Information presented in this section was obtained from observations and approximate measurements by Stantec Consulting (Stantec) during a June 19, 2008, site visit, as well as from a report provided by SMII entitled “Columbia Mill Dam- Phase II: Inspection/Evaluation Report” prepared by Tighe & Bond, Inc.(TBI) dated February 28, 2008. Throughout this document, areas of the Dam, abutments, and river banks will be referred to as being “left” or “right”, with the point of reference being the middle of the channel, looking downstream.

1.1.1 Columbia Mill Dam

The Dam is situated approximately one mile above State Route 20 on the Housatonic River and was constructed in 1901, likely to provide water for the adjacent, currently inactive papermill. No current dedicated uses (e.g., fire suppression) of the Dam or impoundment were identified as part of this study.

The overall length of the Dam spillway is approximately 116 feet, with an additional 50-foot long earth embankment at the right abutment. The maximum Dam height is approximately 25 feet. The Dam spillway is timber crib construction with a concrete (gunite) faced spillway and upstream concrete (gunite) approach apron. The earthen embankment has a masonry and concrete-faced training wall at the upstream face and a densely vegetated slope on the downstream side. The left abutment wall abuts a sluiceway and is a 3-foot wide gated concrete channel with an invert approximately 3 feet below the dam

crest. The left side of the sluiceway is the exterior wall of one of the buildings making up the Columbia Mill complex.

Dam maintenance records indicate that several distinct Dam reconstruction efforts have been undertaken since its construction in 1901. In 1936, a void developed under the downstream slope towards the left of the Dam. Subsequently, the spillway apron was shortened, a downstream concrete cutoff wall founded on bedrock was installed, and the void was filled with new stone ballast. In 1951, the wood planking covering the timber crib and stone ballast was removed from the entire structure, the upstream approach apron was eliminated, and an upstream cutoff wall was installed. Concrete (gunite), reinforced with wire mesh, was applied directly onto the timber crib and stone ballast, replacing the old wood planks lining the upstream and downstream slopes. The downstream concrete was blended into the discharge apron that was previously installed in 1936. A 1984 inspection of the Dam revealed that the downstream cutoff was in poor shape, once again causing the migration of ballast stones from the Dam's interior. The void was filled with concrete and the downstream toe of the Dam banked with large boulders to prevent further migration of ballast material away from the toe of the Dam. Most recently, the Dam underwent emergency action repairs during the fall of 2007 to correct problems associated with an upstream vortex in the Housatonic River that was noted by SMII personnel on August 22, 2007, as detailed in the TBI report dated February 28, 2008. Of note, pictures of voids encountered during the emergency action repairs of 2007 indicate the wooden timbers from the original timber crib construction are in an advanced stage of deterioration.

The alignment of the spillway appears to be to the right of the alignment of the former river channel, based on the channel morphology downstream from the Dam and observations of the apparent bathymetry in the impoundment noted by the TBI report. As is typical of old mill construction, the river channel appears to have been encroached upon by the mill complex, with the location of the screened river water-intake structures in line with the former river channel. Two turbines were noted downstream from the screened river water-intake structure under the current mill complex in the vicinity of the former river channel; however, their usage was discontinued some time ago as was evident from their state of disrepair.

The overall visible condition of the Dam, particularly the spillway section, is moderate, likely a result of the emergency dam repairs made during the 2007 construction season. Stantec's observations of soil erosion, disturbed vegetation, and woody debris on and adjacent to the Dam suggest that overtopping of the entire Dam likely occurs on a regular basis, and that the spillway is therefore hydraulically inadequate. SMII employee Steve Jezak indicated that Columbia Street, adjacent to the impoundment, often overtops during flood events.

1.1.2 Railroad Tracks

A set of railroad tracks runs parallel with the river on its outside bend, separating the main river channel from an adjacent wetland complex in the vicinity of Columbia Street, Greylock Street, and Golden Hill

Road. The railroad track forms the left river bank for approximately 1800 feet and undergoes periodic bank erosion, as evidenced by riprap placement along the river's edge noted during the site visit and aerial photography. No direct hydraulic linkage (i.e., a culvert, bridge) between the adjacent wetland complex and main river channel was immediately noticeable, but it is anticipated that the two are connected.

1.1.3 Industrial Piping

Upstream from the Columbia Mill, three pipe lines were observed running within the current wetted river channel through the impoundment. SMII employee Steve Jezak indicated that when the Mill is operational, one of the pipes provides cool, fresh water to the Columbia Mill from a well field upriver on property leased from the Lane Co. Another pipe provides waste water service to a treatment facility located at an off-site mill complex. Mr. Jezak indicated that he was not aware of the reason for the third pipe. While he thought it did not belong to SMII, he did indicate that the three pipes were installed in the 1960s.

Two pipes continue within the river channel downstream from the Dam. It is assumed that they serve the Eagle Mill facility, although the turbid nature and elevated flood stage on the day of the site visit prevented Stantec from confirming this. One pipe exhibited some hydraulic control on the river, as noted by a change in water surface elevation in the vicinity of the pipe; however, it is unclear whether this pipe influences fish passage at lower flows. A third pipeline that runs outside of the wetted channel, parallel to the railroad tracks down to the Eagle Mill complex, was undergoing demolition at the time of the site visit.

A subsequent communication with SMII employee Roger Scheurer indicated that all three pipes noted during the June 19, 2008, site visit belong to SMII, serving as connections between the upstream Niagara Mill, Columbia Mill, and downstream Eagle Mill facilities. Mr. Scheurer indicated that all three pipe lines are no longer used and considered disposable as a result of the mills shutting down.

A waste water discharge pipe is located atop the Columbia Mill Dam. Mr. Scheurer indicated that all discharges from the Columbia Mill are done via this discharge by way of a National Pollution Discharge Elimination System (NPDES) waste water treatment plant outfall permit.

1.2 Ecological Impacts

Apparent ecological impacts and impairments associated with the continued presence of the Dam include the loss of riverine habitat and associated function and values, adverse impacts to upstream fish passage, and elimination of upstream passage for some aquatic fauna.

The impoundment created by the Dam extends approximately 2,400 feet upstream to the bridge at Golden Hill Road. The general character of the impoundment is lacustrine, except during periods of high flow. The dominant habitat adjacent to the impoundment is upland forest with some bordering wetlands along the right side of the impoundment, and bordering wetlands and a larger wetland complex along the left side of the impoundment.

Substrates in the impoundment vary and appear to be dominated by relatively small mineral material (e.g., sand), silt, and organic detritus. Some remnants of the natural streambed were noted from photos contained within the TBI dam modification report, including cobbles in the immediate vicinity of the Dam and mill complex river water intake screens. The apparent coating of silts and sand material over this cobble layer and the readily viewable sandbar approximately 500 feet upstream from the Dam indicates that the impoundment traps inflowing sediments. The observed character and composition of the aggraded material in the impoundment suggest that habitat for riverine benthic organisms is limited and degraded compared to reach locations upstream and downstream from the impoundment.

Given the former industrial nature of the Housatonic River upstream of the Columbia Mill Dam impoundment, it is likely that the aggraded material contains industrial wastes, including polychlorinated biphenyls (PCBs). Given the moderate river gradient upstream of the impoundment and relatively narrow impoundment width, it is likely that sediments may become re-suspended in the water column seasonally during high flow events.

The Dam is likely a complete barrier to upstream passage by aquatic fauna. The Dam alone appears to be a substantial barrier to riverine and riparian fauna. The left-bank riparian corridor is blocked by the Columbia Mill structure immediately downstream from the Dam, and land adjacent to the right terminus of the Dam rises sharply from the stream channel below. Removal of the Dam would restore some continuity along the adjacent riparian corridors.

2.0 RESTORATION

This section provides brief descriptions and evaluations of potential restoration alternatives, associated challenges, and a step-by-step overview and conceptual timeline for proposed actions.

2.1 POTENTIAL RESTORATION ALTERNATIVES

Potential restoration alternatives presented here include dam removal. Reconstruction of the Dam is not considered here as it does not specifically address ecological restoration at this time.

2.1.1 Dam Removal

Dam removal appears to be a practical and feasible alternative for ecological restoration at this site. Removal of the Dam would restore riverine habitat and continuity and would remove an anthropogenic barrier to movement of resident fishes and other aquatic fauna. In addition, removal of the Dam would eliminate dam owner liability, ongoing capital expenditures necessary for repair, maintenance, and dam safety compliance.

Both partial and full dam removal warrant further evaluation at this site, as the configuration and construction of the Dam suggests that removal of the Dam would substantially restore riverine and riparian habitat and function with a minimum of effort and associated disturbance.

Restoration Challenges Associated with Dam Removal

Identified restoration challenges associated with dam removal at this site include identifying the magnitude of potential restoration benefits, impacts to adjacent infrastructure, sediment management, and impacts to recreational and historical resources. These challenges would not vary substantially for partial or full dam removal alternatives.

Potential benefits, including improved fish passage, restoration of riverine and riparian continuity, and an increase in ecological functions and values provided by a river, would need to be compared with potential adverse impacts, including the loss of ecological functions and values provided by the existing impoundment and recreational resources. The evaluation of ecological benefits and impacts would also need to include potential impacts to regulated resources such as wetlands and threatened and endangered species occurrences and habitats.

Potential impacts to adjacent infrastructure include changes in hydraulic conditions along the railroad right-of-way between the bridge on Golden Hill Road and the Columbia Mill and potential impacts to the existing industrial piping infrastructure located along the river channel bottom. Potential impacts to the railroad right-of-way could be evaluated through typical engineering analyses, including hydraulic modeling and scour analyses. The evaluation of potential impacts to the industrial pipelines within the river channel would need further study. However, it is anticipated that ice scour would be of concern, as well as freezing of the pipes during the winter months, provided they were to remain in place post-removal. It is unclear if the pipes would block upstream passage of fish during low water periods. Consideration should also be given to protection of the existing mill complex structure during high flows.

Sediment management is a critical item when considering dam removal and should consider the amount, mobility, composition, and possible contamination of the sedimented material. Based on preliminary field observations, the reach of the river downstream from the Dam appears capable of assimilating mobilized sediments. This would need to be verified through such work as evaluating the volume of potentially mobile sediments and their fate following dam removal. Analytical analyses of sediments for potential contaminants would need to be performed using approaches applied to other similar projects. However, it should be noted that sediments are likely to contain industrial wastes associated with the former industrial use of the river. The TBI report on the emergency dam repair modifications noted the likely nature of PCBs in the impoundment and estimated up to 4,000 cubic yards of material containing greater than 50 parts per million PCBs would need to be excavated and properly disposed of off-site.

The impoundment currently provides limited recreational resources associated with fishing and use of small watercraft (e.g., canoes). The location and relative difficulty of access suggests that small craft usage is likely limited to landowners abutting the impoundment.

Potential impacts to historical resources would be directly related to 1) the removal of a potentially historical structure, and 2) the loss of historical context associated with the loss of the impoundment relative to the Mill. Both issues should be addressed through consultation with appropriate agencies.

3.0 PROJECT PLANNING AND PROCESS

This section presents a general approach to project planning, probable opinions of cost, conceptual schedules for feasibility studies (FS), permitting, and construction, including construction oversight.

3.1 FEASIBILITY STUDY

An appropriate FS for removal of the Dam would apparently be consistent with similar studies developed recently for the Riverways Program. Based on prior experience and information obtained as part of this study, it is recommended that factors relevant to potential sediment and soil contamination and the potential effects to existing infrastructure be considered critical path items.

An FS for this site should include the evaluation of general task items listed below, along with the development of conceptual and final, or "engineering," plans. Based on the conclusion of this study and the study previously prepared by TBI that there is only one practical alternative (i.e., dam removal), it is suggested that the FS be streamlined and consider only dam removal or full dam replacement relative to no-action.

3.1.1 Overall Project Management

Overall project management should be consistent with similar projects performed by the Riverways Program. Support on the local level is crucial to the success of a project of this nature; therefore, project management or assistance should be provided by the town. Because of project-specific goals relevant to resident fishes, close coordination with the Massachusetts Division of Fish and Wildlife is recommended.

3.1.2 General Task Items

Topographic and Bathymetric Surveys

Topographic and bathymetric surveys would be required to evaluate dam removal alternatives and associated impacts.

Specific features included in the topographic survey should include, at a minimum, the primary Dam, submerged industrial pipe infrastructure, railway grade, Columbia Mill, and the remains of the Eagle Mill Dam. Suggested limits of the survey are from the spillway design flood pool (elevation 116 feet) starting 50 feet upstream of the bridge on Golden Hill Road to 50 feet downstream of the toe of the Dam (approximate elevation 883 feet). The topographic survey should include work within the channel of the Housatonic River downstream from the Dam within the limits described above. Additional survey work should include potential routes for mobilization of construction equipment, including tracked hydraulic excavators and haul trucks.

Bathymetric surveys should be performed in the impoundment between the Dam and the bridge upstream at Golden Hill Road. The density of bathymetric survey points should be greatest in the vicinity of the Dam but should also adequately cover the noted sand bar 1800 feet upstream of the Dam.

Sediment Characterization

Sediment characterization should include the evaluation of physical characteristics and potential contamination. Sediment samples for the evaluation of physical characteristics are necessary for the evaluation of potential sediment mobility following dam removal and should be obtained from a variety of areas along the impoundment thalweg. Appropriate equipment for initial sediment sampling includes manual corers and Ponar-type dredges. Manual probing should be performed to evaluate the relevant features (e.g., rock outcrops) in the impounded reach.

Sediment samples for the evaluation of potential contamination should be obtained from depositional areas, as determined from field observations and professional judgment. In addition, to provide reference data, sediment samples should be obtained from locations downstream and/or upstream from the project reach, as determined from field observations and professional judgement.

Contaminant Testing

Sediments should be evaluated for potential contamination based in a manner similar to other projects performed by the Riverways Program. Contaminant testing of soils may be appropriate, particularly in areas of known fill (i.e., along the right section of the Dam).

Sediment Management Planning

Sediment management planning requires knowledge of the volume of impoundment material, its potential mobility, and potential contamination. The course of action is largely related to the results of analytical analyses, particularly if the results indicate the presence of contaminants in excess or relevant regulatory thresholds. If it is determined that sediment contamination is not present or is below appropriate regulatory thresholds, natural erosion appears to be an appropriate sediment management approach at this site.

Hydrology and Hydraulics

Hydrologic and hydraulic analyses would need to be performed to evaluate potential affects associated with dam removal. Relevant hydrologic parameters, including peak flow and seasonal flow-duration statistics, could likely be derived from daily average flow data obtained from the downstream U.S. Geological Survey (USGS) gauging station, which has data for a period in excess of 95 years. This station (USGS No. 01197500 Housatonic River at Great Barrington, MA) is located approximately 20 miles downstream from the Dam. The tributary drainage area at this gage is reported by the USGS as 282 square miles.

Hydraulic evaluations for this project are apparently amenable to analysis using the U.S. Army Corps of Engineers HEC-RAS one-dimensional hydraulic model. These analyses should include both high flow and low flow scenarios.

Rare Species Presence and Management

The identification and management of on-site rare species should include preliminary coordination with relevant state and federal agencies (e.g., Massachusetts Natural Heritage and Endangered Species Program). If known populations occur in the vicinity of the project area, biological field surveys may be required as part of project planning, and appropriate measures may be developed to prevent or minimize the take of listed species.

Fisheries

Dam-removal factors related to fisheries include the restoration of riverine habitat and the removal of an existing barrier to upstream migration. Barring the presence of rare or threatened species dependent upon the impoundment, no substantial concerns were identified here.

Adjacent Infrastructure

Potential impacts to the adjacent railway grade and in-stream industrial piping were identified as a potential constraint for removal of the Dam. These are described previously in this report and are considered critical path items.

Permitting

Permitting requirements for this site would be similar to those encountered during other similar studies recently performed by the Riverways Program and include local, state, and federal permits.

Historic Assessment

Both the Dam and adjacent mill are potentially historic structures. Removal of the Dam would therefore likely require coordination with local, state, and federal agencies, depending upon removal funding sources and regulatory requirements.

Replacing Current Dam Functions

Current Dam functions include limited recreational fishing and boating and historical context relevant to the adjacent mill. Opportunities for recreational fishing and boating would remain following Dam removal. Historical context would apparently be eliminated with removal of the Dam.

3.1.3 Community Outreach

Community outreach should be initiated prior to the development of an FS and should continue through FS development. At a minimum, this should include public meetings at the inception and conclusion of the conceptual design phase of the FS.

3.2 PROJECT APPROACH, SCHEDULE, AND PROBABLE OPINIONS OF COST

Tables 1 and 2 provide a conceptual approach, schedule, and probable opinions of cost for work, including the development of an FS, permitting, and construction. The probable opinions of cost are dependent on the extent of contamination and volume of sediments that will need to be removed.

The suggested project approach is to conduct an FS with permitting initiated approximately three months following the start of the FS.

Table 3: Feasibility Study and Conceptual Designs

Feasibility Study	Completion Timeline In Months from NTP*	Probable Opinion of Cost	Comments
Project Evaluation	***Work: Months 0.0 to 4.5***		
Topographic Survey	Month 1.5	$40,000	Approximately 20 acres on state-place coordinate system
Bathymetric Survey	Month 1.5	$3,000	Boat-mounted sonar with Geographic Positioning System and subsequent mapping
Sediment Characterization	Month 1.5	$15,000	Includes sampling for analyses
Hydrology and Hydraulics	Month 3.0	$6,000	Hydrology from USGS gage, 1-dimensional hydraulic (e.g., HEC-RAS)
Sediment Contaminant Testing	Month 2.0	$10,000	
Soil Contaminant Testing	Month 2.0	$5,000	
Sediment Management Planning	Month 3.0	$8,000	
Other Feasibility Study Items	Month 3.0	$40,000	
Alternatives Analysis			
Development of Conceptual Alternatives	Month 3.5	$25,000	
Evaluation of Conceptual Alternatives	Month 4.0	$10,000	
Conceptual Design & Plans	Month 4.5	$25,000	
Reporting and Outreach	***Work: Months 1.0 to 5.5***		
Public Outreach Meeting(s)	Months 0.5 through 5.0	$3,000	
Draft Feasibility Study	Month 4.5	$18,000	
Final Feasibility Study	Month 5.5	$18,000	
Feasibility Study – Total Cost		**$226,000**	
Engineering Design	***Work: Months 5.5 to 7.0***		
Draft Engineering Drawings	Month 6.5	$7,000	
Final Engineering Drawings	Month 7.0	$15,000	
Engineering Design – Total Cost		**$22,000**	
Total Cost		**$248,000**	

**Note: "NTP" – Notice To Proceed*

Table 4: Permitting and Construction

	Completion Timeline In Months from NTP*	Probable Opinion of Cost	Comments
Permitting			Permitting Timeline Continues from Table 1
Preliminary Coordination	Month 1.5	$3,000	
Permit Preparation**	Month 7.5	$50,000	Excluding Permit Fees
Permit Review Period	Month 10.5	$2,000	Permit Review/Respond to Inquiries
Permit Approval	Month 11.0	-	Receipt of permits
Permitting – Total Cost		**$55,000**	
Construction	**Restart Timeline**		
Contractor Notice to Proceed	Month 0.0	-	
Dam Removal	Month 1.0	$420,000	Demolition and disposal of existing structure
Sediment Removal***	Month 1.0	$900,000	
River Restoration	Month 1.5	$170,000	Including rip-rap as needed and re-vegetation of exposed river channel
Site Restoration Complete	Month 3.0	-	Removal of erosion and sediment control measures
Construction Oversight	Month 1.5	$5,000	Assumes “Environmental Monitor” not required
Construction – Total Cost		**$1,495,000**	
Total Cost (Feasibility Study/Engineering Design/Permitting/Construction)		**$1,798,000**	

*Note: “NTP” – Notice to Proceed

**Note: Permit preparation estimate assuming no soil or sediment contamination.

***Note: Estimate based upon TBI estimate of 4000 CY of material with greater than 50 ppm PCB needing off-site disposal.

4.0 EAGLE MILL DAM

Information presented in this section was obtained from observations and approximate measurements by Stantec during a June 19, 2008, site visit to evaluate the condition of the Eagle Mill dam remnants, with specific reference to fish passage.

4.1 GENERAL SITE CONDITIONS

The Eagle Mill Dam is situated approximately 660 feet above State Route 20 on the Housatonic River and was apparently constructed to provide water for the adjacent, currently inactive, Eagle Mill papermill facility. The date of construction is unknown but is assumed to be similar to the upstream Columbia Mill Dam (i.e., 1901). No current dedicated uses (e.g., fire suppression) of the Dam or impoundment were identified as part of this study.

Only the timber cribwork foundation framework and right bank abutment remain. Much of the cobble and boulder cribwork fill material has been washed downstream. The remaining timber cribwork presents a hazard to boaters as it contains many metal spikes that create an entrainment situation. Fish passage is presumed to be seasonal, as the timber cribwork may present a barrier to migration at lower flows. The dam remnants create an approximately three-foot rise in river grade, creating potential for some aggraded material in the shallow impoundment above. Dam removal or reconfiguration of the timber crib work structure to enhance fish passage or remove anthropogenic boating hazards should be subject to the same considerations regarding sediment testing and management as described above for the Columbia Mill Dam.

The tailout of the downstream scour pool appears to have collected much of the Eagle Mill Dam remnants, creating a downstream hydraulic control approximately 1 foot high, 75 feet below the Eagle Mill Dam site. At the time of the inspection, elevated water conditions in the river prohibited an assessment of this structure. However, it is assumed that the structure does not provide much of a hindrance to fish passage.

A cost estimate for removal of the remaining Eagle Mill Dam structure will depend on the characteristics of aggraded sediment impounded above the site. If no contaminants are present, the cost may be as little as $35,000 to remove the remaining structure, or significantly more than $400,000 if sediment removal and off-site disposal are needed, as dictated by the sediment characterization during the dam removal FS process.

APPENDIX A
Site Photographs

Photo 1. Columbia Mill Dam from left bank with woody debris.

Photo 2. Upstream view of Columbia Mill Dam.

Photo 3. Columbia Mill Dam from left bank showing potential construction access road.

Photo 4. Spillway of Columbia Mill Dam with mill process water effluent pipe.

Photo 5. Upstream view of Columbia Mill Dam.

Photo 6. Downstream view of Columbia Mill on river left, adjacent to Columbia Mill Dam showing second potential construction access road.

Photo 7. Upstream view of Columbia Mill and Columbia Mill Dam.

Photo 8. View of Columbia Mill and Columbia Mill Dam impoundment.

Photo 9. View of aggraded sediment in the impoundment (approximately 1,800 feet upstream from Columbia Mill Dam).

Photo 10. Housatonic River looking downstream from the bridge on Golden Hill Road.

Photo 11. View of in-stream pipe alignment below Columbia Mill Dam (straight line in water). Note that pipe in foreground is currently undergoing removal.

Photo 12. View of Eagle Mill Dam remnants from left bank.

Photo 13. View of Eagle Mill Dam remnants from downstream.

Photo 14. View of downstream hydraulic control 75 feet below remains of Eagle Mill Dam.

Photo 15. Close up view of Eagle Mill Dam remnants. Note cribwork alignment perpendicular to channel alignment and large metal spikes.

Photo 16. View of Eagle Mill and Eagle Mill Dam remnants looking upstream from Route 20 bridge.