Appendix A — CER Pontiac Dam Restoration Report

Design Memorandum for Pontiac Reach Restoration Feasibility Study

Pawtuxet River

Warwick, RI

Prepared For:

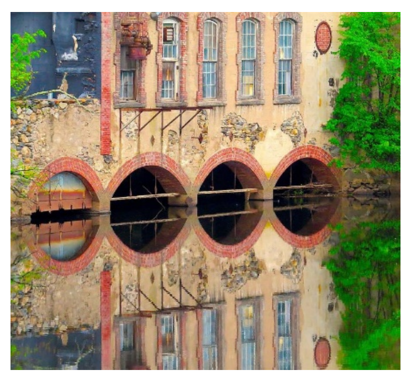
Thomas Ardito
Center for Ecosystem Restoration
23 Brown Street, Suite 207
Wickford, RI 02852
t. 401.575.6109
ecorestoration@gmail.com

Submitted By:

Princeton Hydro, LLC
www.PrincetonHydro.com

Primary Contact and Project Manager:

Laura A.S. Wildman, PE
New England Regional Office
931 Main Street, Suite 2
South Glastonbury, CT 06073
t. 860.652.8911
c. 860.989.7966
LWildman@PrincetonHydro.com



Photograph Sources:
(top to bottom)
www.ecorestoration.com;
fireengineering.com;
fineartamerica.com

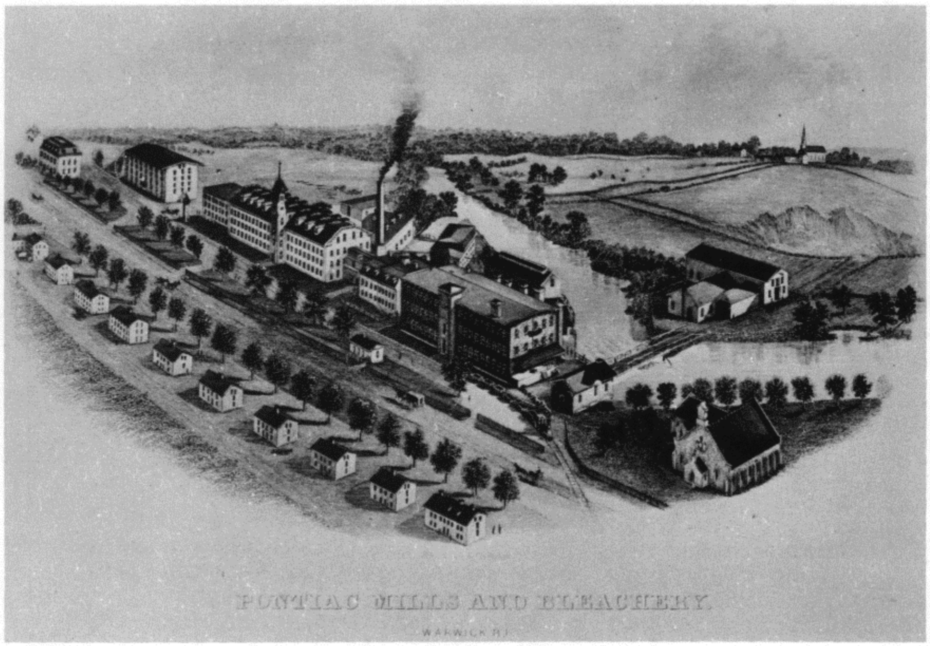
July 2016

CONTENTS

INITIAL PROJECT UNDERSTANDING

Pontiac Mills Dam – Background and History

In preparation for this project Princeton Hydro initiated a search for historic documents that might help shed light on the site's history, the potential for a falls beneath the dam and the interior construction of the dam. We were able to locate several key documents including historic Rhode Island Dam Safety books that describe many of the dams in Rhode Island and their construction, historic town reports and 1884 Annual report from the Commissioner on Dams. Several very interesting facts were revealed.



Pontiac Mills (J. D. Van Slyck, New England Manufacturers, 1879).

Several reports referred to the Indian "weir" that had been located at the site, and at least one report referred to a falls, although its location was unclear. Typically tribes placed fishing "weirs" in location where the river pinched in or where there may have already been a partial barrier that slowed the migration of the fish upstream causing then to group up, and allowing for easier harvesting. The report below referred to the Pontiac Village (see Figure 1) as a "village of many names" and describe that it was once referred to as "Great Weir" because numerous fish, including salmon, shad and herring, migrated there and were caught with "weirs" or water traps.

> ***A Village of Many Names***
> *Despite the changes of the 21st century, Pontiac is one of the villages in Warwick that has managed to retain much of its 19th century identity. Dominated by the Pontiac Mill, the village has been the home of a number of ethnic groups that came to Warwick to seek employment in the cotton mills and made a positive impact on the town. Pontiac, while having a number of unique features, is an excellent example of the mill villages that abounded in Rhode Island.*
> *In 1852, at about the time that the mills were thriving in Crompton, Centreville and Apponaug, the B.B. & R. Knight Company acquired the mills of John H. Clark. They also decided to change the name of the village from Clarkesville to Pontiac. Oliver Payson Fuller, in his 1875 History of Warwick notes, "No one of the villages on*

the Pawtuxet River and its tributaries has been designated by so many different names in the course of its history, as the one we have now come to." He traces the names back to May 10, 1662, when Warwick records show that it was known by the Indian name of Toskeunk. The Records say, "Ordered that Goodman Hedger is apoynted to give notis to ye inhabitants of ye Towne to repayer ye fence at Toskeunk and he to oversee the work....."

Great Weir

Fuller, commenting on the Indian names for the area says, "Papepieset, or Toskiounke, as it was sometimes called, makes a very good mouthfull of language..." The English settlers in Warwick found the Indian names difficult and, as was their custom, renamed the village, calling it "Great Weir" as many fish, including salmon, shad and herring, migrated here and were caught with "weirs" or water traps. Fuller tells us that these early weirs consisted of:

...a wooden trellis-work, armed with sharp pointed sticks, and sunk upon rocks one or two feet below the surface of the stream, and as the middle of the river by being filled with large stones, was rendered too shallow for the upward passage of the salmon and shad, they plunged by necessity into the deeper water near the shore, where these concealed traps received them with a fatal welcome.

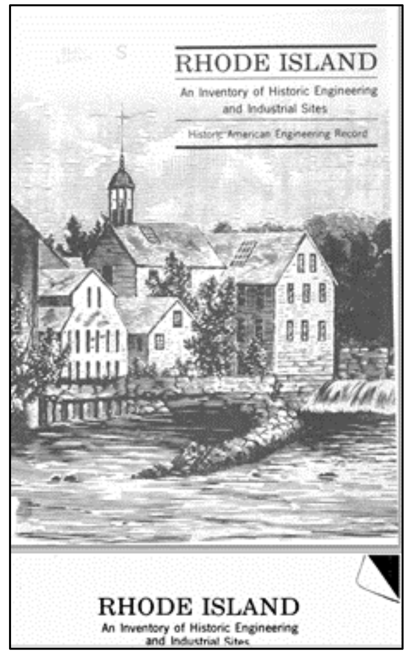
Source:
http://www.warwickhistory.com/index.php?option=com_content&view=category&id=45%3Apontiac-village-&Itemid=98&layout=default&limitstart=10

The following report confirms that the area was once referred to as the "Great Weir" due to the fishing weirs but also notes that the weirs were located near the falls. Pointing to the potential for a falls to exist below the Pontiac Dam.

Native Americans referred to the area as "Papepieset" or "Toskiounke." After arriving in 1642, the early English settlers called the area "Great Weir" because fishing weirs were used to catch fish near the falls. After a bridge was constructed in the locality, the area became known as "the great bridge near the weir," and eventually " Capt. Benjamin Greene's bridge" then "Arnold's bridge." After Senator John Hopkins Clarke purchased the water rights, the region assumed the name of "Clarksville." After purchasing the area, the Pontiac Manufacturing Company named the area "Pontiac" after Chief Pontiac a Northwestern Indian chief. Allegedly, "Mr. Clark, while out in Michigan, saw the picture of the old chief, Pontiac, and on his return had it engraved, to be used as a label on his goods. The name gradually became attached to the village after he left, though many continued to call it "Arnold's Bridge."[1] In 1863 Benjamin Knight and Robert Knight, two brothers, built the Pontiac Mills in the village. Pontiac Mills is a historic textile mill complex on Knight Street in the village of Pontiac, Rhode Island within the city of Warwick. The mills produced the original Fruit of the Loom brand of cloth. The mills were built beginning in 1863 by Robert Knight and Benjamin Knight (B.B. & R. Knight Company). The mills produced uniforms for Union soldiers during the American Civil War. In 1920 Webster Knight sold Fruit of the Loom and the Pontiac Mills. The textile industry in New England *began declining shortly after this period. The mills were added to the National Register of Historic Places in 1972.[2]*

Source: http://en.wikipedia.org/wiki/Pontiac,_Rhode_Island

Because the entire area is on the Historic Register there was a significant amount of information on line regarding the history of the Pontiac Mill. We reviewed much of this data to determine if any mention was given regarding the dam and its construction.



PONTIAC MILLS 1863 E. Greenwich Knight Street 19.294500.4622160 Warwick Kent In i810, this site on the Pawtuxet River contained a sawmill, a grist mill, a wool carding mill and a cotton spinning mill. The land was sold by Horatio Arnold in 1827 to Rice Brown, Jonathan Knowles, and Samuel Fenner, whose partnership collapsed in the depression of 1829. 241 It was bought at auction by John H. Clark, later a United States Senator, who built a stone mill in 1832 and a bleachery in 1834. In 1850, Zachariah Parker and Robert Knight bought the -mills. Two years later, the company of B B. and R. Knight was formed, later to develop into-one of the largest textile combines in the United States. The firm manufactured-under the weli-known trade name "Fruit of the Loom." The surviving structures include a 4-story, brick mill, 200’ X 67’, with an eli 90’ X 40’, built in 1863. This building was originally two stories with a pitched and dormered roof. The mansard-roofed company store at the east -end of the complex was built in 1866. In 1870, a new bleachery was built, 160’ X 53’, replacing the old one which had burned in the same year. This 3-story, stuccoed stone-rubble structure stands to the west of the main mill. On either side of it are stone additions. The 3-story, east addition was built prior to 1874 and housed a machine shop, weave room, and slasher and drawing-in rooms. A 2-story, brick wing on its, west side now houses the Warwick Museum. The mills’ smokestack and water-tower, prominently visible from Interstate 95, also survive.; In the late l880 the company employed 1,500 workers to operate 27,000 spindles. At the same time, there were 170 tenements, of which 120 were company owned. Most of these still survive on streets adjacent to the mill. The dam, gates, and parts of the raceway also survive. The Knight family owned the complex until 1920, and the plant continued to be used as a textile finishing mill until 1970. The new power plant was built in 1948. In 1973, the property was bought by the current owners. It is now occupied by -about thirty tenants. No machinery of historic note survives. <u>The Pontiac Mill complex has been entered on the National Register.</u>

Source: Cole; "Data on Pontiac Plant," company manuscript, 12 September 1955; Allendale Insurance Company, Plan Book, c. 1870s, p. 167.

During Princeton Hydro’s preliminary field investigation of the site we performed some initial sediment probes just upstream of the dam and found the sandy sediment impounded behind the dam to be easy to penetrate with our hand auger. However directly upstream on the dam was entirely concrete. This concrete “apron” extended approximately 50 feet upstream and was attached to the crest of the dam, sloping downward at a gradual slope as it extended upstream. We have observed similar conditions at other potential dam removal projects and have typically found this type of configuration when a timber crib dam or additional legacy dam exists under the dam or just upstream. Our historic investigation was therefore prompted by our desire to determine what the underlying construction of the dam was. While we were unable to find historic plans or details of the dam itself, we did find an interesting passage in the 1884 Annual Report of the Commissioner of Dams and Reservoirs, referring to the fact that the Pontiac Dam has had one time been a stone filled wooden crib dam.

Pontiac Mill Privilege, on the Pawtuxet River.

Dam one hundred and ten feet in length and seven feet high, composed of wooden frame-work with cribs filled with stone and backed with earth. There is some leakage through the structure, but it is inconsiderable, and is said to have existed from the construction of the work.

Source: 1884 Annual Report of the Commissioner of Dams and Reservoirs

It is our belief that this wooden crib dam may still in fact partially exist and that the concrete "apron" we observed extending upstream may be a cap on top of this earlier structure. If that is not the case the concrete "apron" may attach to the upstream mill intake and have played some type of role in maintaining the flow into the intake.

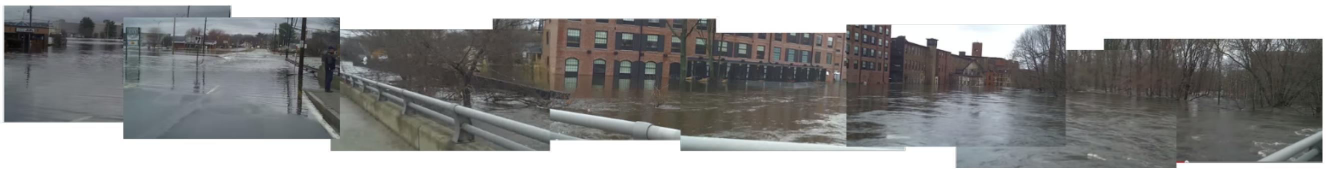
It will be critical to gain more insight into the interconnection between the Mill structure and the dam, as well as the construction of the flood walls, retaining walls and building foundations located along the banks of the river that could potentially be impacted if the pond level upstream of the Pontiac Dam were lowered.

Our field investigation also revealed that the dam's impoundment extends to just below the East Avenue Bridge crossing under the flow conditions that existed during the pre-bid site visit. However our desktop analysis of the effective FEMA water surface profile (see Figures 2 and 3) revealed that the impacts of the dam and its impoundment may extend to the base of the Natick Dam under extreme flooding events. We have therefore estimated the extent of the impoundment to range from 1.7 to 2.5 miles in length, depending on the flow conditions.

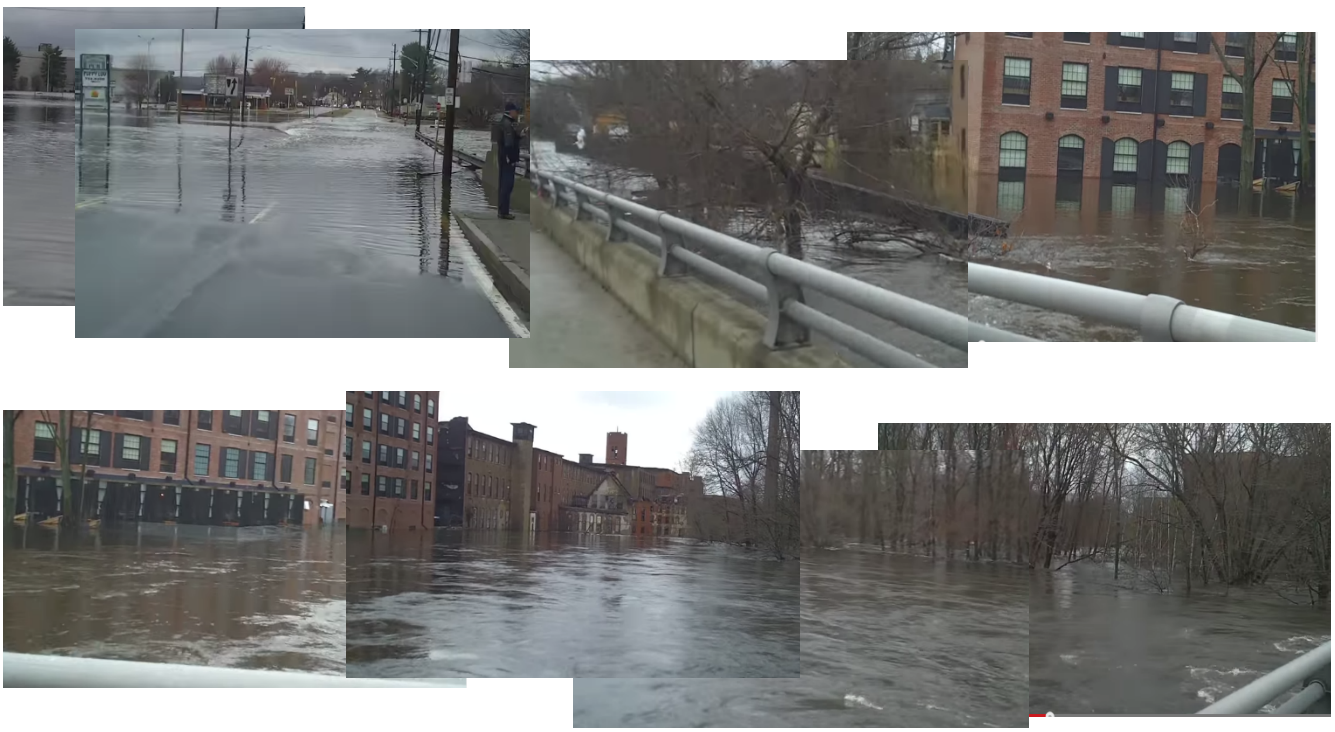
Princeton Hydro's field investigation also revealed that the pipe crossing just downstream of the Pontiac Dam is likely inactive. This pipe is connected to two pipes that exit the Pontiac Mill building and were likely effluent pipes when the mill was active. The pipe has since started to pull away from the tee joint that connected it to the pipes that exit the mill, and no effluent was observed spilling from that joint. It is likely that removal of this pipe will be a relatively straight forward removal of in-channel debris that can be accomplished during the construction of whichever alternative is selected.

Flooding and Modeling

As part of Princeton Hydro's investigation of the existing data available for this site we also obtained and viewed multiple videos that demonstrated the extent of flooding in the Pontiac Village area. Our review of this data helped us to better understand the method of flooding that occurred. Since no video footage of the Pontiac Dam was found that viewed the flood waters from downstream of the dam, it was not possible to assess how backwatered the dam and footbridge were due to the downstream flow conditions.



Full photo-collage panoramic of the site taken from the Greenwich Ave. Bridge during the 2010 Flood
Source: Taken from screen captures of a video at https://www.youtube.com/watch?v=9aYrttxyFkQ



Close up of same panoramic view of the 2010 flooding

SEDIMENT ANALYSIS RESULTS

Sediment Sampling

Princeton Hydro extracted one composite sample composed of similar representative material impounded behind Pontiac Dam during our field visit on December 9, 2015. The sample targeted the lower impoundment and material in the center of the channel which is most likely to be mobilized if the dam were to be fully removed.

Material from multiple subsamples were composited in a sterilized, stainless steel bowl and then transferred to laboratory provided glassware and placed in a cooler on ice. Samples were labeled and logged into a chain-of-custody form, and picked up from the site by a lab courier and transported to Alpha Analytical Labs LLC in Westborough, Massachusetts.

The samples were analyzed for the following parameters:

- Chlorinated Herbicides (10 analytes)
- Organochlorine Pesticides (30 analytes)
- Gasoline Range Organics (1 analysis)
- Total Petroleum Hydrocarbons (1 analysis)
- Metals (Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Hg, Ni, Se, Ag, Tl, V, Zn)
- Hexavalent Chromium
- Cyanide
- Polycyclic Aromatic Hydrocarbons (17 analytes)
- Semi-Volatile Organic Compounds (63 analytes)
- Polychlorinated Biphenyls (PCBs) (9 analytes, 1 total)
- Grain size
- Total Organic Carbon

Sediment Quality Criteria

These results have been compared against:

- RI Residential Direct Exposure Criteria,
- NOAA Freshwater Sediment Probable Effect Concentrations (PEC),
- NOAA Freshwater Sediment Threshold Effect Concentrations (TEC),

These freshwater sediment and marine sediment quality guidelines are compiled by the National Oceanic and Atmospheric Administration in the Screening Quick Reference Tables (SQuiRTs). Consensus-based sediment quality guidelines have been developed to synthesize previously published toxicity studies and have been shown to be both accurate predictors of sediment toxicity and negative predictors for toxicity to benthic invertebrates by direct contact. These guidelines have been established in two-tiers: the Threshold Effect Concentration or Level (TEC or TEL) and Probable Effect Concentration or Level (PEC or PEL). TEC/TEL is the concentration *below* which harmful effects are unlikely to be observed; PEC/TEL is the concentration *above* which harmful effects are likely to be observed. These guidelines do not consider the potential for bioaccumulation and are not intended to serve as site-specific clean-up levels. Instead, they are applied to facilitate the decision-making process regarding sediment management; an absence of exceedances generally serves as a defensible basis for no further investigation.[1] Rhode Island Residential Direct Exposure Criteria is based on long-term daily contact, and thus serves as a conservative threshold for human health risk.

Results and Interpretation

The full laboratory analytical report is included in Appendix A. The sample was composed of 84% fine gravel, 13% sand, with minor proportions of finer size classes, and approximately 0.67% total organic carbon.

Contaminants Not Detected

The majority of analytes were not detected at acceptable reporting limits and may be summarized as follows:

1. Chlorinated Herbicides were not detected;
2. Gasoline Range Organics were not detected;
3. Hexavalent Chromium was not detected;
4. Cyanide was not detected; and,
5. Total Petroleum Hydrocarbons were not detected.

In addition, the following analyte classes were detected at low concentrations and frequencies:

1. 83% (25 of 30) of Organochlorine Pesticides were not detected; four pesticides were detected at concentrations below any corresponding criterium. Chlordane was also not detected, however the reporting limit exceeded the FTEC, but was below the FPEC.
2. 88% (8 of 9) PCBs were not detected; one congener and Total PCBs were detected at concentrations well below any corresponding criterium.
3. 97% (61 of 63) Semi-volatile organics were not detected; two SVOCs were detected at concentrations well below any corresponding criterium.
4. All metals (15) were detected but at concentrations well below any corresponding criterium.

Contaminants Detected

Polycyclic Aromatic Hydrocarbons (PAHs)

Seven PAHs were detected at concentrations exceeding the Freshwater TEC, but below the corresponding PEC and Human Health criteria.

Discussion

Background of PAHs

Polycyclic Aromatic Hydrocarbons are a class of compounds, generally occurring as complex mixtures, that are known contaminants and commonly occur in fine sediments (fine sand, silt, clay) in river systems. Sources of PAHs in the environment are both natural and man-made. Some PAHs are manufactured for research or for the production of dyes, plastics and pesticides. PAHs occurring in the environment are more likely the by-product of incomplete combustion – sources include wildfires, trash burning, wood-burning stoves, furnaces, industrial emissions, energy production (i.e. coal burning), and motor vehicle engines. Automobile exhaust may be the

[1] MacDonald, DD, Ingersoll, CG, and Berger, TA. 2000. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems. Archives of Environmental Contamination and Toxicology. 39:20-31.

most common source in this region and this site. PAHs enter freshwater bodies by atmospheric deposition or stormwater runoff and then bind preferentially to fine grain sizes, which settle out of suspension in backwater depositional areas and accumulate in impoundments. PAHs are a concern because they are persistent in the environment for long periods of time. Common modes of human exposure include breathing polluted air, eating grilled meats, and smoking. Less common sources include coming in contact with heavy oils, coal tar, roofing tar or creosote. Research suggests that inhalation and skin contact may be associated with cancer in humans.

This suite of PAHs are routinely found in impounded sediments throughout the northeast US. Given that (i) the majority of contaminants were not detected or were detected well below human and ecological sediment criteria, and (ii) a subset of PAHs were above threshold effect concentrations that are sufficiently conservative and protective, there is no evidence to suggest that sediment contamination presents a confounding issue that should halt or interrupt this current project phase or preclude dam removal.

HYDRAULIC MODELING

Existing Hydraulic Data

In preparation for the hydraulic analysis a variety of data sources were compiled. Alpha Surveying and Engineering was subcontracted to compete a detailed survey of the dam, downstream pipe crossing, upstream bridge crossing (Route 5), and several stream cross sections. Immediately after the contract was awarded, Princeton Hydro requested the most current hydraulic model from FEMA for this section of the Pawtuxet River. We received a model in HEC-2 format that had been created in the 1980s. We converted the HEC-2 data into HEC-RAS and combined it with the relevant survey and field data. Partway through that analysis it was brought to light that a newer FEMA model had been released immediately after our original data request. The new, comprehensive, geo-referenced HEC-RAS model was ultimately obtained and combined again with the relevant survey and field data.

Considering that the new FEMA model is approved by FEMA and uses current data, the FEMA cross sections were primarily modeled, with the surveyed cross sections being added in as necessary. LiDAR and field measurements were used to supplement both the existing model and the survey data to create a comprehensive hydraulic representation of what is in the field.

The pedestrian bridge above Pontiac Dam was not modeled by FEMA; for consistency and ease of modeling, it was also not modeled by Princeton Hydro.

Pontiac Dam, Pawtuxet River, Warwick, RI

Hydrology and Hydraulics (H&H) Analyses

For the hydrologic and hydraulic analysis, five (5) scenarios were modeled that each represent a restoration option.

Scenario 1: Existing Conditions. All structures are left as they exist currently, including the dam, downstream pipe, sediment, and Route 5 bridge.

Scenario 2: Technical fishway. This option leaves intact all existing structures, but includes the installation of a technical fishway for fish passage. Since all structures remain in place, there is no change to flooding conditions.

Scenario 3: Partial dam removal (to elevation 19). This scenario allows for partial dam removal and is intended to be installed with a rock ramp. The available survey is limited downstream of the dam, but a 2% slope rock ramp could be expected to extend between 150 and 250 feet downstream of the dam. It should be noted that the interior structure of the dam is unknown, for this reason partial removal may not be technically possible to achieve.

Scenario 4: Full dam removal. Under this option the dam is removed completely and upstream elevations adjusted to account for downstream sediment transport. The downstream abandoned watermain is also removed.

Scenario 5: Full dam removal plus pedestrian tunnel. To further improve flooding conditions, this scenario removes the dam, upstream sediment, and downstream pipe, as in Scenario 4 but also models a pedestrian tunnel under Route 5 to add more conveyance to the channel. The tunnel is 12 feet wide with a bottom elevation of 25.0

The FEMA 10-, 50-, 100-, and 500-year flows were modeled in steady state conditions.

Results

In the vicinity of the shopping mall parking lot (cross-section 40844.7) a maximum decrease of 0.7 feet during the 100-year flood would be expected with full dam removal and a pedestrian tunnel. Water surface elevation reductions decrease as one moves farther upstream and increase moving towards the dam to a maximum change of 1.18 feet.

Since a technical fishway does not change the existing hydraulic structures, it will have no impact on water surface elevations. The flood extents and water surface elevations for a technical fishway will be identical to the existing conditions extents. Similarly, the pedestrian tunnel has such a small change on the 100-year water surface elevations that the flooding extents are identical to the full dam removal scenario.

Table 1 below displays the 100-year water surface elevation at select cross sections for each of the modeled scenarios:

Cross Section	Existing Conditions/ Technical Fishway	Proposed Partial Removal	Proposed Full Removal	Full Removal and Ped. Tunnel
46348.91	34.12	33.93	33.97	33.93
45374.6	32.87	32.59	32.65	32.59
40846.7	32.18	31.86	31.77	31.77
40845.7	31.68	31.27	31.15	31.14
40844.7	31.06	30.54	30.36	30.36
40843.7	30.81	30.23	30.05	30.04
40711.79	30.58	29.99	29.79	29.8
40645.33	Rt. 5 (Greenwich Ave Bridge)			
40620.12	30.48	29.86	29.65	29.69
40578.1	30.29	29.61	29.43	29.43
40535.14	30.23	29.53	29.35	29.35
40471.78	30.15	29.41	29.23	29.23
40405.34	30.08	29.31	29.14	29.14
40279.47	29.54	28.48	28.36	28.36

40268.62	Pontiac Dam - Inline structure			
40242.96	28.47	28.47	28.47	28.47

Although not applicable to regulatory flood mapping, Table 2 below displays the 50-year water surface elevation at select cross sections for each of the modeled scenarios:

Cross Section	Existing conditions	Partial dam removal	Full dam removal	Full dam removal plus pedestrian walkway
46348.91	32.92	32.56	32.62	32.56
45374.6	31.93	31.43	31.51	31.43
40846.7	31.28	30.57	30.7	30.57
40845.7	30.81	29.85	30.03	29.85
40844.7	30.3	29.03	29.29	29.03
40843.7	30.1	28.73	29.03	28.73
40711.79	29.95	28.54	28.84	28.55
40645.33	Rt. 5 (Greenwich Ave Bridge)			
40620.12	29.88	28.42	28.74	28.44
40578.1	29.74	28.21	28.51	28.21
40535.14	29.69	28.14	28.44	28.14
40471.78	29.63	27.97	28.27	27.97
40405.34	29.58	27.87	28.17	27.87
40279.47	29.12	27.14	27.44	27.14
40268.62	Pontiac Dam - Inline structure			
40242.96	27.3	27.26	27.3	27.26

Table 3 below displays the 10-year water surface elevation at select cross sections for each of the modeled scenarios:

Cross Section	Existing conditions	Partial dam removal	Full dam removal	Full dam removal plus pedestrian walkway
46348.91	30.36	29.69	29.59	29.59
45374.6	29.72	28.84	28.7	28.7
40846.7	29.28	28.2	28.03	28.03
40845.7	28.92	27.56	27.33	27.34
40844.7	28.57	26.69	26.26	26.27
40843.7	28.48	26.5	26.04	26.05
40711.79	28.42	26.41	25.92	25.92
40645.33	Rt. 5 (Greenwich Ave Bridge)			

Cross Section	Existing conditions	Partial dam removal	Full dam removal	Full dam removal plus pedestrian walkway
40620.12	28.38	26.36	25.86	25.86
40578.1	28.31	26.2	25.7	25.7
40535.14	28.29	26.16	25.67	25.67
40471.78	28.24	26.01	25.51	25.51
40405.34	28.21	25.91	25.41	25.41
40279.47	28.06	25.37	24.79	24.79
40268.62	Pontiac Dam - Inline structure			
40242.96	24.91	24.91	24.88	24.88

Water surface elevations under the 10 year scenario show a greater change from existing to proposed conditions than for the larger storms, likely because the backwater effects are less pronounced and the Route 5 bridge is acting as less of a control in smaller events. The profile plots for the 10, 50, and 100 year events are included in Appendix B. The full dam removal with the pedestrian bridge option was not shown for clarity as the elevations are nearly identical to the full removal scenario. Flood maps for the 10 and 100 year events are included in Appendix C and supplemental hydraulic information is in Appendix D.

SUMMARY AND CONCLUSIONS

Since the structural makeup of the dam is unknown, Princeton Hydro does not recommend any partial removal of the structure or installation of fish passage ramps that might interfere with the dam' structural integrity, unless mechanical borings are taken of the dam to determine if the internal structure of the dam is suitable for partial removal/lowering. With the known history of the dam, the current understanding of river hydraulics, and the salient environmental interest in fish passage, it is Princeton Hydro's opinion that full dam removal is the best restoration option. It should be stated that multiple bridges exist upstream of the dam and if the dam removal option is selected the potential scour impacts that dam removal might have on the bridge piers and abutments will need to be further investigated.

Even though the full removal of Pontiac Dam is unlikely to significantly reduce the regulated 100-year water surface elevation in the low-lying areas upstream of the dam, dam removal will still provide a variety of benefits, especially when coupled with other improvements and amenities. Although flood insurance rates may not be decreased, the frequency of impacts due to smaller flood events is likely to be significantly reduced with the removal of the dam, especially to those buildings in closest proximity to the structure itself. The suburban/urban nature of this site and its location at the focal point of a historic industrial village lends this project well to the incorporation of public amenities such as riverside walkways/trails, river viewing locations (i.e. benches and enhancement of vantage points), the enhancement of stormwater facilities that encourage biofiltration and/or the development of rain gardens. Reconnecting communities to their rivers helps promote environmental awareness and stewardship. We envision a project that integrates a riverside trail, floodplain benching, stormwater enhancements, and incorporation of historic details specific to the site. The downstream Pawtuxet Dam has already been removed, opening a new stretch of river to anadromous fish species. Removal of Pontiac Dam would add an additional 2.5 river miles of habitat for migratory species and also open up additional fishing and boating opportunities in the restored river.

With the dam goes the long-term maintenance needs of a relict structure and the risk of dam breach. The small pedestrian bridge over the current dam was not modeled by FEMA, and therefore was also not modeled by Princeton Hydro for consistency, but the five foot space between the crest of the dam and the bottom of the footbridge could easily become clogged during a large flood event with trees and debris, effectively raising the height of the dam by more than five feet. Removal of the structure eliminates one more complication to the current flooding issues.

The City already has a charming, historical atmosphere, and the restoration of the Pawtuxet River could greatly enhance the river's potential to be a community focal point while also reducing long-term dam maintenance, nuisance flooding, and large-scale flooding and improving the natural ecosystem of the Pawtuxet River for important species of fish and aquatic organisms.