108 FERC ¶ 61,048
UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Before Commissioners: Pat Wood, III, Chairman;
Nora Mead Brownell, Joseph T. Kelliher,
and Suedeen G. Kelly.

Wellesley Rosewood Maynard Mills, L.P. Project No. 5018-004

ORDER ACCEPTING SURRENDER OF EXEMPTION

(Issued July 13, 2004)

1. On March 8, 2002, Wellesley Rosewood Maynard Mills, L.P. (Wellesley Rosewood or exemptee), filed an application to surrender its exemption for the Clock Tower Place Hydroelectric Project No. 5018, located on the Assabet River in Maynard, Massachusetts. We are approving the surrender with the conditions described below.

BACKGROUND

2. On October 3, 1983, the Commission issued a 5-megawatt (MW) exemption for what was then called the Mill Pond Project,[1] pursuant to sections 405(d) and 408 of the Public Utility Regulatory Policies Act of 1978 (PURPA).[2] That law authorizes the issuance of an exemption from the licensing provisions of

[1] 25 FERC ¶ 62,001 (1983). The exemption was issued to Digital Equipment Corporation, which used the project to produce hydroelectric power for a 45-acre commercial office complex (originally called Maynard Mill, now called Clock Tower Place). The office complex, of which the project is a part, was purchased by Franklin Lifecare Corporation in January 1995, and subsequently by Wellesley Rosewood in January 1998. The transfer of an exemption from licensing does not require Commission approval.

[2] 16 U.S.C. §§ 2705(d), 2708. These provisions authorize the Commission to issue an exemption for a small hydroelectric power project of 5 megawatts or less.

Part I of the Federal Power Act (FPA) for a project that will add generation to a dam built before April 20, 1977. In fact, the project had once earlier been an operating hydroelectric project,[3] and the original exemptee applied to restore the project to operation.

3. The project includes a 170-foot-long, 9.5-foot-high granite-block dam (Ben Smith Dam); an 18.75-acre reservoir (Ben Smith Impoundment); a 1,600-foot-long power canal and culvert leading from the reservoir to a gatehouse with two manually controlled gates; and, beyond the gatehouse, an 18.3-acre upper and lower mill-pond system (mill ponds). When the project was operated for power production, the water passed from the ponds into an intake/trashrack structure and through a 49-foot-long, 7-foot-diameter steel penstock to a powerhouse containing a single 125-kilowatt (kW) turbine-generator. After leaving the powerhouse, the water passes through twin 300-foot-long tailrace tunnels to rejoin the Assabet River about 5,400 feet downstream of Ben Smith Dam.

4. PURPA section 405(d) requires a 5-MW exemptee to comply with mandatory terms and conditions submitted by the relevant state and federal fish and wildlife agencies.[4] Standard Article 2 of the exemption reflects the section 30(c) requirement.[5] For the Mill Pond Project, the conditions filed by the U.S. Fish and Wildlife Service (FWS) included the requirement that the exemptee provide an instantaneous flow release at the project dam of the lesser of 39 cubic feet per second (cfs) or inflow to the project area, for the purpose of maintaining downstream aquatic habitat.

5. The project has not been operated since 1998, which is the year Wellesley Rosewood acquired the hydroelectric project. On March 8, 2002,Wellesley Rosewood filed to surrender the exemption, stating that it wished neither to generate power nor to sell the project and its exemption to anyone else.

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[3] There is no record of the project ever having been previously licensed.

[4] PURPA section 405(d) cross-references section 30(c) of the FPA, 16 U.S.C. § 823(a), which imposes the same requirement for an exempted project that uses only the hydroelectric potential of a certain type of man-made conduit.

[5] Exemptions are subject to standard conditions that are set forth in the Commission's regulations. The standard conditions for the Mill Pond Project No. 5018 exemption were set forth at 18 C.F.R. § 4.106 (1983).

6. Initially, the exemptee requested simply to surrender the exemption without addressing possible adverse environmental effects of the surrender or actions necessary to prevent those effects. Commission staff therefore asked for additional information about the exemptee's plans for the project works and for river flow allocation as of the cessation of the Commission's jurisdiction over the project.

7. The exemptee responded with a draft flow management plan providing that when the Assabet River inflow to the Ben Smith Impoundment is 20 cfs or less, both gates on the power canal would be kept closed, such that all inflow would stay in the river channel. When inflow is between 20 and 40 cfs, one gate would be closed and one gate would be open, such that some water would enter the power canal and flush the ponds. When inflow is above 40 cfs, one gate would stay open and the other shut, but they would alternate these positions, so as both to remain in good working order. At storm flows, both gates would remain open.

8. The Commission issued public notice of the exemptee's surrender application on April 10, 2002. Acton Hydro, Inc. (Acton), owner of the downstream Assabet Hydroelectric Project No. 7148, filed a timely intervention in opposition to the proposed surrender, arguing that there is a need for the energy the Mill Pond Project can produce.[6] The U.S. Department of the Interior filed a late intervention, which has been granted.[7] Comments were filed by FWS, Massachusetts Historical Commission; U.S. Environmental Protection Agency (EPA); Massachusetts Department of Environmental Protection (Massachusetts DEP); Massachusetts Division of Fisheries and Wildlife (Massachusetts DFW); National Park Service; Organization for the Assabet River (OAR); and Robert M. Greenough of Assabet Sand and Gravel.

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[6] Acton asserts that, in lieu of project surrender, the project and exemption should be transferred to it. However, as noted, Wellesley Rosewood has stated that it does not wish to transfer the project or exemption to anyone else, and the Commission cannot compel a transfer. Once the exemption surrender becomes effective, the site will be open to applications for license. (Because an exemption applicant must hold all non-federal property rights necessary to operate and maintain the project for which it seeks exemption, 18 C.F.R. § 4.31(c)(2), so long as Wellesley Rosewood owns the project, only it could apply for a new exemption.)

[7] *See* Commission Secretary notice issued March 12, 2003, in this proceeding (unpublished).

9. All commenters oppose the exemptee's proposed flow plan for failing to maintain a minimum of 39 cfs in the Abasset River. The draft plan focuses instead on the need for periodic flows of diverted water through the mill ponds to prevent stagnation and to maintain enough pond water for fire-fighting purposes. Massachusetts DFW asserts that the plan would impair high-quality habitat in the bypassed reach of the Abasset River, as well as wetlands associated with the Ben Smith impoundment. The National Park Service, EPA, and OAR note that the Abasset River suffers from severe eutrophication, due primarily to wastewater sources of phosphorus and the numerous impoundments that reduce the river's flow velocity. They argue that instream flows of less than 39 cfs could further impair water quality.[8]

10. The Commission staff's Draft Environmental Assessment (EA) of the proposed surrender was issued on September 17, 2003. The EA examined the exemptee's proposal and a number of alternatives, including partial or complete dam removal,[9] but ultimately recommended installation at the power canal gates of a fixed "threshold," a weir to ensure that all inflow of 39 cfs or below would remain in the river channel, and that inflow above 39 cfs would mean a modest amount of water would spill into the canal and reach the ponds.

[8] National Park Service comment letter filed June 25, 2002, at 1; EPA comment letter filed May 22, 2002, at 1; OAR comment letter filed May 10, 2002, at 3.

[9] The EA notes that there are no anadromous fish in the project area, nor are proposed or listed endangered species an issue. The EA finds that removing the dam would convert the area to a free-flowing riverine reach providing habitat that favors riverine species of fish over warmwater fish, thus changing the species composition of the impoundment from one currently dominated by pond fish to one dominated by river fish. While removal could result in some improvement of dissolved oxygen levels in the Ben Smith Reservoir, it could reduce dissolved oxygen levels from what they now are downstream of the dam. Furthermore, although dam breach or removal would reduce the eutrophication and resulting algal blooms and heavy plant grown found in slow-moving sections of the Assabet River behind the dam, it would isolate the mill ponds, possibly resulting in eutrophication there. Finally, the EA concluded that the cost of dam removal is between $680,000 (to lower or breach) and $1.1 million (for complete removal), while the Canal Gate modification (at a cost of $19,000) will largely accomplish the desired environmental protections.

DISCUSSION

11. Comments on the Draft EA were filed by FWS, EPA, the National Park Service, Massachusetts DFW, Massachusetts DEP, OAR, Acton, and the Town of Maynard Conservation Commission (Maynard Commission). These comments have been considered in the development of the Final EA, which is attached to and issued with this order. Although a number of the commenters find little value in preserving the ponds and would prefer to see the dam and other project works removed for the benefit of riverine resources, all but Acton and Massachusetts DFW support the Draft EA's recommendation for a permanent weir.

12. The fixed-crest weir will be installed in place of the gate structures and at an elevation slightly higher than that of the crest of the Ben Smith Dam. When the river flow does not overtop the weir crest, all flows will spill over the Ben Smith Dam. This will ensure a minimum 39 cfs flow (or inflow) for the river, sufficient to protect the river's water quality and habitat. When river flows overtop the weir crest, seven percent of flows in excess of 39 cfs will enter the mill ponds, thereby helping to prevent their stagnation and provide water for fire suppression.

13. We conclude that accepting the exemptee's application to surrender the exemption, conditioned on the installation of the fixed-crest weir,[10] gives adequate protection to the Assabet River resources and is in the public interest. In addition, once the Commission's jurisdiction has ceased, other regulatory authorities with jurisdiction over the project will become responsible for ensuring the safety of the project. By letter filed January 21, 2003, the Massachusetts Department of Environmental Management informed the Commission that once the exemption surrender is effective, its Office of Dam Safety will assume regulatory jurisdiction of the Ben Smith Dam and associated appurtenances.

[10] In its policy statement on project decommissioning at relicensing, the Commission noted that it could not at that time require the licensee to install new facilities, such as fish ladders. Project Decommissioning at Relicensing, FERC Stats. & Regs. ¶ 31,011 at 31,232 (December 14, 1994), 60 *Fed. Reg*. 339 (January 4, 1995). By contrast, the policy statement noted, it is the licensee which requests an intra-term surrender, in order to be relieved of the obligations under the license, and the Commission can therefore place terms on the acceptance of the surrender application. *Id*. at 31,230 n. 42. We believe the same analysis as to surrenders applies to exemptions, which in any event have no term.

NATIONAL HISTORIC PRESERVATION ACT

14. The Assabet Mill Area in which the project is located is eligible as an historic district for listing in the National Register of Historic Places. The project structures are considered contributing elements to the historic district, and many of the project facilities are considered individual historic structures, as well.[11]

15. Accepting surrender of the exemption would remove the project from federal jurisdiction, an action considered an adverse effect under 36 C.F.R. § 800.5(2)(vii) of the Advisory Council's regulations implementing section 106 of the National Historic Preservation Act (NHPA). Accordingly, on June 9, 2004, the Commission staff executed a Memorandum of Agreement with the Massachusetts State Historic Preservation Officer (SHPO) directing the exemptee to consult with the SHPO and file for Commission approval a final Historic Properties Management Plan within nine months of an order accepting surrender of the exemption.

The Commission orders:

(A) The application filed by Wellesley Rosewood Maynard Mills, L.P. on March 8, 2002, for surrender of the exemption from licensing for the Mill Pond Project No. 5018 is granted, subject to the conditions set forth below.

(B) *Implementation Plan*. Within 270 days from the date of issuance of this order, the exemptee shall file for Commission approval a plan for the installation of a fixed weir at the Mill Pond Project's gatehouse.

The exemptee shall prepare the plan in consultation with the U.S. Fish and Wildlife Service (FWS), U.S. Environmental Protection Agency (EPA), Massachusetts Historical Commission, Massachusetts Division of Fish and Wildlife, the Maynard Conservation Commission, and the Organization for the Assabet River. The plan shall include, but not be limited to: (1) confirmation of the elevation, length and pitch of the Ben Smith Dam and the dimensions of the canal gatehouse; construction and design drawings of a fixed weir to be installed within the canal gatehouse, and all formulas and calculations used in that design

[11] *See* Final EA, Section J.9.

and any supporting evidence (*i.e.*, professional survey reports); (2) provisions for a minimum aquatic base flow of 39 cfs to the bypass reach, or inflow, whichever is less; (3) provisions addressing the need for aquatic plant control and flood flow accommodation; and (4) a schedule for the plan's implementation.

In addition, the exemptee shall include with the plan documentation of consultation with FWS, EPA, the Massachusetts Historical Commission, Massachusetts Division of Fish and Wildlife, Maynard Conservation Commission, and Organization for the Assabet River; copies of comments and recommendations on the completed plan after it has been prepared and provided to the agencies; and specific descriptions of how the consulted entities' comments are accommodated by the plan. The exemptee shall allow a minimum of 30 days for the agencies to comment and to make recommendations. If the exemptee does not adopt a recommendation, the filing shall include the exemptee's reasons, based on project-specific information.

The Commission reserves the right to require changes to the plan. The plan shall not be implemented until the exemptee is notified that the plan is approved. Upon Commission approval, the exemptee shall implement the plan, including any changes required by the Commission.

(C) *Erosion and Sediment Control Plan for Installation of Fixed Weir*. The exemptee shall, within 270 days from the date of this order, file for Commission for approval an erosion and sedimentation control plan based on actual-site geological, soil, and ground water conditions and on the final design for the fixed weir, including but not limited to: (1) a description of the actual site conditions; (2) measures to control erosion, prevent slope instability, and minimize the quantity of sediment and potentially toxic substances released into the river or mill ponds during installation activities; (3) detailed description, functional design drawings, and specific topographic locations for all erosion and sediment control measures; (4) monitoring and maintenance programs during the fixed weir installation process, including an implementation schedule; and (5) provisions for periodic review and revision of the plan during the installation process.

The exemptee shall prepare the plan in consultation with the U.S. Fish and Wildlife Service, Massachusetts Division of Fish and Wildlife, Maynard Conservation Commission, and Organization for the Assabet River. The exemptee shall include with the plan documentation of consultation, copies of comments end recommendations on the completed plan after it has been prepared and provided to the consulted entities, and specific descriptions of how the consulted entities' comments are accommodated by the plan. The exemptee shall allow a minimum of 30 days for the consulted entities to

comment and make recommendations before filing the plan with the Commission. If the exemptee does not adopt a recommendation, the filing shall include the exemptee's reasons, based on project-specific information.

The Commission reserves the right to make changes to the plan, implementation of which shall not be commenced until the exemptee is notified by the Commission that the plan is approved. Upon Commission approval, the exemptee shall implement the plan, including any changes required by the Commission.

(D) At least 60 days prior to the start of construction, the exemptee shall submit to the Commission's New York Regional Engineer one copy, and to the Commission two copies(one of these shall be a courtesy copy to the Director, Division of Dam Safety and Inspections), of the final contract drawings and specifications for the fixed weir at the project gatehouse. The Commission may require changes in the plans and specifications to assure a safe and adequate structure. The exemptee may not begin construction until authorized by the Division of Dam Safety and Inspections New York Regional Engineer.

(E) The exemptee shall implement the "Memorandum of Agreement Among the Federal Energy Regulatory Commission and the Massachusetts State Historic Preservation Officer for Managing Historic Properties that May be Affected by Wellesley Rosewood Maynard Mill's Surrender of the License Exemption for the Mill Pond Hydroelectric Project in Middlesex County, Massachusetts (FERC No. 5018-004)," executed on June 9, 2004, including but not limited to the Historic Properties Management Plan for the project. As stipulated in the Memorandum of Agreement, the exemptee shall within nine months of this order file the Historic Properties Management Plan for Commission approval. The Commission reserves the authority to require changes to the Management Plan at any time until the surrender becomes effective. If the Memorandum of Agreement is terminated prior to Commission approval of the Management Plan, the exemptee shall obtain approval from the Commission and the Massachusetts State Historic Preservation Officer before engaging in any ground-disturbing activities or taking any other action that may affect any historic properties within the project's area of potential effect.

(F) Within 30 days of completion of the actions required by this order, the exemptee shall file documentation showing that the approved actions have been satisfactorily completed. Surrender of the exemption shall become effective upon issuance of a Commission notice or order stating that the approved actions have been satisfactorily completed.

By the Commission.

(S E A L)

Linda Mitry,
Acting Secretary.

FINAL ENVIRONMENTAL ASSESSMENT

SURRENDER OF EXEMPTION FROM LICENSING

MILL POND HYDROELECTRIC PROJECT

FERC PROJECT NO. 5018-004

MAYNARD, MASSACHUSETTS

Federal Energy Regulatory Commission
Office of Energy Projects
888 First Street, NE
Washington, D.C. 20426

July 2003

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Summary

Wellesley Rosewood Maynard Mills, L.P. (WRMM), exemptee for the Mill Pond Hydroelectric Project (Project), filed a request to surrender its exemption from licensing. The Mill Pond hydroelectric project (originally granted an exemption from licensing in 1983), has an installed capacity of 125 kilowatts (kW). However, WRMM has not operated the project since they assumed ownership and management of the property in 1998.

In March 2002, WRMM first proposed to surrender it's exemption from licensing with no physical changes to any project facilities. In July 2002, WRMM supplemented their surrender application with a flow management plan in which they describe how they would divert and control flow from the Assabet River through the project facilities. Through the NEPA Scoping process, we identified several resource areas that may be affected by the surrender of the projects exemption; water quality and quantity, fisheries, terrestrial, wetlands, land use, scenic and aesthetic, recreational, and cultural resources. This Final Environmental Analysis (FEA) analyzes the effects of surrendering the project's exemption from licensing on the above mentioned resources. With this EA, we analyze five alternatives with regard to the surrender application, including: (a) surrender with dam removal, lowering or breaching, (b) surrender with modification of the canal gatehouse (fixed weir), (c) surrender with sealing the canal and manage mill Ponds as closed-water system, (d) Surrender with no environmental measures and (e) no-action.

Staff has identified four of the five alternatives (a through c and e) to not be a major federal action significantly affecting the quality of the human environment under NEPA. In contrast, the implementation of Alternative d, would result in a "*finding of significant impact*" and consequently would require the development of an Environmental Impact Statement (EIS).

FINAL ENVIRONMENTAL ASSESSMENT
SURRENDER OF EXEMPTION FROM LICENSING

Federal Energy Regulatory Commission
Office of Energy Projects

Project Name: Mill Pond Hydroelectric Project
FERC Project No. 5018-0004

A. APPLICATION

1. Application Type: Surrender of Exemption from Licensing
2. Date filed: March 8, 2002; supplemented on July 31, 2002
3. Applicant: Wellesley Rosewood Maynard Mills, L.P.
4. Water Body: Assabet River
5. Nearest City or Town: Maynard
6. County and State: Middlesex County, Massachusetts

B. PURPOSE AND NEED FOR ACTION

On March 8, 2002, Wellesley Rosewood Maynard Mills, L.P. (WRMM), exemptee for the Mill Pond Hydroelectric Project (Project), filed a request to surrender its exemption from licensing (the Project is also commonly referred to as the Clock Tower Place Hydroelectric Project). This request was filed in response to letter dated July 22, 1999, in which the Commission's Office of Hydropower Licensing, Engineering Compliance Branch, instructed the exemptee to provide; 1) a plan and schedule to restore power production at the project; or 2) a petition to voluntarily surrender their exemption. On July 31, 2002, the surrender request was supplemented with the filing of an Additional Information Response and a draft flow management plan. The exemptee states that it has no need and/or desire to generate any hydroelectric power either for its own or any one else's consumption. During the public meeting on the draft Environmental Assessment (DEA), a representative from WRMM stated that they did not want to be saddled with the burden of certain reporting requirements and capitalization needs associated with the operation of the project. The Project has not operated since January 1, 1998, when WRMM assumed ownership and management of the property. Figures 1, and 2, in Appendix C of this document, display a Project location map and the Project's facilities, respectively. The project does not involve any federal lands.

C. NEED FOR POWER

The Mill Pond Hydroelectric Project is located in the New England Region of the Northeast Power Coordinating Council (NPCC). The Mill Pond Project has an installed capacity of 125 kW and is capable of generating approximately 800,000 kilowatthours (kWh) of electrical energy. Currently the project is not generating power and has not generated power since WRMM assumed ownership and management of project facilities on January 1, 1998.

On March 8, 2002, WRMM, the exemptee for the project, filed a request to surrender its exemption from licensing. WRMM states that it has no need and/or desire to generate any hydroelectric power either for its own or any one else's consumption. The North American Electric Reliability Council in their Electric Supply and Demand Database for 2002 reported that the summer peak demand for the New England Region of the NPCC was 24, 967 megawatts (MW) in 2001 and would grow at the average annual rate of 1.54 percent over the 2002 to 2010 forecast period.

The power from the project would be useful in meeting a small part of the regional need for power. The lost generating capacity from decommissioning the power plant would be valued at its replacement cost.

D. PROJECT HISTORY AND BACKGROUND

Project facilities were originally constructed and installed in the early 1900's. The Ben Smith Dam was constructed just prior to 1900. An exemption from licensing (exemption) for the Project was originally granted to the Digital Equipment Corporation (DEC) on October 3, 1983. The exemption allowed DEC to produce hydroelectric power for use in its multiple-building complex. The building complex, originally called the Maynard Mill (the Mill), is a commercial office complex, totaling approximately 45 acres in area.

DEC purchased the Mill in 1974; and the Franklin Lifecare Corporation purchased the Mill from the DEC in January 1995. WRMM purchased the property from the Franklin Lifecare Corporation in January 1998, and changed the complex's name to the Clock Tower Place.

E. PROJECT DESCRIPTION

Existing project features include: (1) a 170-foot-long, 9.5-foot-high, granite-block dam (Ben Smith Dam); (2) an 18.75-acre reservoir (Ben Smith Impoundment); (3) a 1,600-foot-long power canal and culvert; (4) a gatehouse approximately 1,600 feet downstream from the entrance to the canal, containing two six-foot, manually controlled, bottom drafting slide gates; (5) an 18.23-acre upper and lower mill pond system (Mill

Ponds); (6) an intake trashrack structure; (7) a 49-foot-long, 7-foot-diameter steel penstock; (8) a powerhouse containing a single 125-kilowatt (kW) turbine-generator; (9) twin 300-foot-long tailrace tunnels; and (10) appurtenant facilities.

The Ben Smith Dam spans the Assabet River approximately 400 feet upstream of the Route 117 Bridge in Maynard, Massachusetts. The Ben Smith Dam creates an 18.75 acre reservoir in the Assabet River between the dam and the White Pond Road Bridge, approximately 2,200 feet upstream from the dam. Flow is diverted from the Assabet River through the power canal into the upper and lower Mill Ponds.

The power canal begins as a 58-foot-wide channel on the northeast shore of the Assabet River and Ben Smith Reservoir. The canal runs in a northeasterly direction, quickly narrowing to a relatively uniform width of approximately 40 feet. About 1,600 feet from the beginning of the canal, is a gatehouse with two manually controlled gates. The Upper Mill Pond is located immediately downstream of the gatehouse and has a surface area of approximately 6.5 acres. The Sudbury Road Bridge marks the boundary between the Upper and Lower Mill Ponds. The Lower Mill Pond has a surface area of approximately 11.8 acres.

The hydraulic capacity of the Mill Pond project is 128 cubic feet per second (cfs) with a minimum operating capacity of 64 cfs. Water enters the turbine through an intake structure and forebay located in the lower Mill Pond; the water passed through a slotted trash rack into a 7-foot-diameter steel penstock, before entering the pressure case and turbine. After passing through the turbine, the water would discharge into the tailrace (two outlet tunnels which discharge into the Assabet River, located immediately upstream of the Walnut Street Bridge).

The control panel that controls the hydroelectric generation capability has been electrically disconnected, and is not currently operational. The wicket gate control arm has also been disabled resulting in a permanent closing of the wicket gates.

The Project has been determined to be a low-hazard potential development by the Commission's Division of Dam Safety and Inspections New York Regional Office (D2SI-NYRO). D2SI-NYRO concluded that the facility is safe and in adequate condition. The latest D2SI-NYRO inspection of the Project, dated August 23, 2002, concluded that all project structures, machinery, and equipment appeared to be in satisfactory condition. By letter dated January 9, 2003, the Massachusetts Department of Environmental Management (MADEM) stated that their Office of Dam Safety would assume jurisdiction of the Ben Smith Dam and associated appurtenances following the surrender. The MADEM stated that the project is in fair condition.

F. ACTION ALTERNATIVES

a. Surrender with Dam Removal, Lowering, or Breaching

The FWS, MADFW and the Organization for the Assabet River (OAR) proposed the removal, lowering, or breaching of the Ben Smith Dam as possible alternatives to the proposed surrender. This alternative would lower or remove the Ben Smith Reservoir and no flow would be diverted to the Mill Ponds.

b. Surrender with Modification of Canal Gatehouse

The FWS and MADFW also requested that we analyze an alternative in which the canal gatehouse is modified to allow some surface flow into the Mill Ponds under high inflow conditions [e.g. Ben Smith Impoundment level > 177.5 feet mean sea level (msl)]. This alternative would ensure that a minimum flow of 39 cfs would remain in the river, and allow for some surface flows during high-flow periods to enter the Mill Ponds. This alternative is similar to the current exemption in that only flows in excess of 39 cfs would be able to pass into the Mill Ponds. To accomplish this, the Canal Gatehouse would be modified by removing the existing gate structures and installing in their place, a fixed weir. The crest elevation of the weir would be greater than that of the Ben Smith Dam's crest, prioritizing the river's flow over the dam first and then over the crest of the fixed weir as the river's flow and consequently the water surface elevation increases This alternative would eliminate the manual manipulation of the gates and the water resources of the Assabet River at the Project.

c. Surrender with Sealed Canal and Manage Mill Ponds as Closed-Water System

Another alternative that the FWS and MADFW recommended and supported by OAR was for WRMM to seal off the diversion canal and manage the Mill Ponds as a closed-water system. Managing the Mill Ponds as a closed water system would prevent any water from being diverted from the Assabet River in to the Mill Ponds at all times. EPA also requested that we analyze a non-flow dependant alternative, such as this one. This alternative may include modification to or replacement of the canal gatehouse, or the construction of a dyke across the canal to prevent water from passing into the Mill ponds. This alternative would eliminate the operation of the gates for any reason.

d. Surrender with no Environmental Measures

In WRMM's surrender application dated March 5, 2002 and filed on March 8, 2002, WRMM simply proposed to surrender their exemption and made two requests; 1) to be removed from any list of organizations permitted by the FERC and/or any other federal agency to produce and utilize its own hydroelectric power, and 2) to

concomitantly surrender any and all "Exemption from Licensing" rights and privileges which it has accrued/retained as a result of the FERC's decision of October 3, 1983[1], and any applicable orders covering Project 5018 as issued by the FERC since that date. No physical changes to the project were proposed and the applicant made no proposals for the management of flows through project facilities, or proposed any protection, mitigation or environmental measures.

G. NO-ACTION ALTERNATIVE

The no-action alternative would involve denying the request for surrender of exemption. Under this alternative WRMM would restore generation at the Project, in compliance with the conditions set forth in the order of exemption.

H. ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED ANALYSIS

1. Proposed Action as Modified on July 31, 2002

In WRMM's surrender application dated March 5, 2002 and filed on March 8, 2002, WRMM simply proposed to surrender their exemption and made two requests; 1) to be removed from any list of organizations permitted by the FERC and/or any other federal agency to produce and utilize its own hydroelectric power, and 2) to concomitantly surrender any and all "Exemption from Licensing" rights and privileges which it has accrued/retained as a result of the FERC's decision of October 3, 1983[2], and any applicable orders covering Project 5018 as issued by the FERC since that date. No physical changes to the project were proposed and the applicant made no proposals for the management of flows through project facilities, at that time.

On July 31, 2002, WRMM supplemented and modified their application and proposal with the filing of the draft flow study plan (Plan) dated April 2, 2002 (modified on April 10, 2002). The Plan describes how inflow to the Ben Smith Reservoir would be managed through the project facilities (outlined in Table 1), for the following operational goals:

- Maintain flow through the Assabet River downstream of the Ben Smith Dam during most normal flow conditions
- Prevent stagnation of the upper and lower Mill Ponds
- Maintain sufficient volume in the Mill Ponds for fire protection

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[1] 25 FERC ¶ 62,001

[2] 25 FERC ¶ 62,001

- Minimize operational needs of gates and other project facilities
- Minimize odors in the Assabet River and the Mill Ponds

WRMM provided a copy of the Plan, and a request for comments to the U.S. Environmental Protection Agency (EPA), U.S. Fish and Wildlife Service (FWS), National Park Service (NPS), MADEM, Massachusetts Department of Environmental Protection (MADEP), Massachusetts Division of Fisheries and Wildlife (MADFW), the Maynard Conservation Commission, and the Organization for the Assabet River (OAR). The FWS, MADFW, MCC, OAR and Acton Hydro (Acton) each provided comments on the draft flow management plan. In general, each of the commenting entities did not approve of the Plan's allowance for flows to be diverted from the Assabet River when inflow to the Ben Smith Reservoir was at or below 39 cfs.

Table 1. Proposed project control structure operation, based on inflow (cfs) to Ben Smith Reservoir. (Source: WRMM as modified by staff).

Inflow (cfs)	Left gate at gatehouse	Right gate at gatehouse	7ft x 5.5ft slide gate	24 inch gate at primary outlet	24 inch gate at building 3
0-10 (Drought)	closed	closed	closed	closed	closed
10-20 (Low flow)	closed	closed	closed	closed	limited regulation*
20-40 (Low flow)	limited regulation**	closed	closed	closed	limited regulation**
>40 (Normal flow)	alternate open***	alternate open***	closed	closed	regulated
Storm flow	open	open	open	regulated	open

* The gate regulation would be limited to maintain flow in the ponds.
** Conducted to promote flushing of the ponds.
*** The operation of gate should be alternated to help maintain good working order.

In review of the Plan, Staff determined that there was insufficient detail to conduct a detailed analysis of the Applicant's proposal as modified by the plan. While table 1 appears to detail project operations, the use of terminology such as "Limited Regulation" and "Regulated" do not quantify the actual flow that would be provided to either the Mill Ponds or the Project's bypass reach. Therefore, the extent to which the Project's surrender will affect the associated environmental resources is indeterminate. Subsequently, we have eliminated the Applicant's proposed action as modified from further review.

2. Transfer of Exemption

If the exemption were transferred, the new exemptee would be required to restore generation at the Project and would be responsible for the costs and activities related to repairing, maintaining, and operating the existing Project.

No requests for transfer of exemption were received. If a request for transfer of exemption had been received, the Commission would have reviewed and made an appropriate determination on that request. In a comment letter dated May 9, 2002, and at the May 14, 2002 site visit, Mr. Michael Coates of Acton, expressed interest in a possible transfer of exemption. During the site visit, staff informed Mr. Coates that he could coordinate with the exemptee and who could file a request for withdrawal of surrender application and then request for transfer of exemption. In Acton's comment letter on the draft Environmental Analysis (DEA) dated October 21, 2003, Acton stated that they have approached WRMM on several occasions regarding a transfer of the Project's exemption from licensing and continues to be interested in a transfer of the exemption. To date, WRMM has not requested a withdrawal of the surrender application nor have they requested that the exemption be transferred to any other entity; therefore, we have eliminated this alternative from further detailed analysis.

However, a Commission action in support of the surrender application would not preclude any party from filing for a preliminary permit and hydroelectric power license, for the rehabilitation and operation of the Mill Pond Project, in the future.

3. Installation of Fish Passage Facilities

In the Project's exemption, the FWS has reserved the authority to require fish passage at the Project's diversion dam. The U.S. EPA in their May 8, 2002 comment letter, recommended that WRMM continue to be responsible to provide fish passage facilities at the Ben Smith Dam, post surrender of the exemption. EPA states that as downstream barriers to fish passage are removed, providing fish passage at the Ben Smith Dam may become a priority in the future. The OAR also suggested that WRMM and any future owners should be required to provide fish passage at the Ben Smith Dam for migrating fish such as alewives and shad when they can reach the base of the Ben Smith Dam; i.e., when fish passage is provided at other downstream dams.

The State of Massachusetts does not plan to restore the anadromous Atlantic salmon to any of the Merrimack River tributaries in Massachusetts including the Assabet River; additionally, there are no formal restoration plans for clupeids (river herring) for the Assabet River. However, there are on-going efforts to restore clupeids to the downstream Concord River. Even though there are no formal plans, it is the intention of the MADFW to extend restoration efforts for clupeids upstream into the Assabet River and eventually above the Ben Smith Dam as upstream barriers to fish passage are

removed.[3] However, the Commission has a policy not to require the construction of fish passage facilities when a project is being decommissioned.[4] Additionally, the Commission cannot require any action (such as the future installation of fish passage facilities) after the surrender is complete, because, after the surrender, the Commission will not have any jurisdiction or authority to enforce such conditions. Therefore, we have eliminated this alternative from further consideration. Following the surrender of exemption and in the event of future anadromous fish restoration efforts, the construction of a new fish passage facility is a step for the new regulatory authority to take.[5]

I. INTERVENTIONS, CONSULTATION AND COMMENTS

Commission staff issued a tendering notice, soliciting interventions and comments on the application, April 10, 2002. The notice set a closing date of May 10, 2002, for those filings. The following individuals, organizations, and agencies responded:

Intervenors

Individual, Organization, or Agency	Date of Intervention
Acton Hydro Inc.	May 9, 2002
U.S. Department of the Interior	June 5, 2002

Comments on the Application

Individual, Organization, or Agency	Date of Letter
U.S. Fish and Wildlife Service	May 6, 2002 and January 7, 2003
Massachusetts Historical Commission	May 7, 2002
U.S. Environmental Protection Agency	May 8, 2002
Robert M. Greenough (Assabet Sand & Gravel)	May 8, 2002
Massachusetts Department of Environmental Protection	May 9, 2002
Organization for the Assabet River	May 9, 2002
Massachusetts Division of Fisheries and Wildlife	May 20, 2002
National Park Service	June 17, 2002

[3] Telephone conversation with Dr. Caleb Slater of Massachusetts Division of Fisheries and Wildlife, April 17, 2003.

[4] Project decommissioning at relicensing, RM93-23-000; December 14, 1994.

[5] Project decommissioning at relicensing, RM93-23-000; December 14, 1994.

On September 17, 2003, staff issued and noticed the DEA for the surrender of the Mill Pond Hydroelectric Project's exemption from licensing. The notice of DEA set November 3, 2003 as the close of the comment period on the DEA. By letter issued on December 12, 2003, the Commission further extended the comment period until January 12, 2004. Comments on the DEA were received from the following individuals, organizations, and agencies and are addressed in Appendix B of this FEA.

Commenters to the DEA

Individual, Organization, or Agency	Date of Letter
Massachusetts Division of Fisheries and Wildlife	October 6, 2003
Organization for the Assabet River	October 20, 2003
U.S. Fish and Wildlife Service	October 21, 2003
Acton Hydro Company, Inc.	October 21, 2003
U.S. Environmental Protection Agency	October 29, 2003
National Park Service	October 29, 2003
Massachusetts Department of Environmental Protection	October 31, 2003
Town of Maynard Conservation Commission	November 12, 2003

Summary of Interventions

Acton Hydro Inc. filed an intervention in opposition to the proposed surrender. Acton is a downstream owner and operator of the FERC licensed Assabet Hydroelectric Project (P-7148). Acton stated that there is a need for domestic energy sources in order to strengthen the energy security of the nation; and although the Project would make a small contribution to domestic energy security, any local energy source should be highly valued. Acton continued to state that granting the surrender would preclude a return to operation of one domestic energy source and forego an opportunity to decrease the region's dependence on foreign energy sources. If operating, the Project would contribute to the national energy supply by producing electricity for the Clock Tower Place building complex.

Acton stated that there is a commercial demand for renewable energy in the Project's region of the country, and granting surrender would deny potential customers an opportunity to expand the renewable energy portfolio of the region. Acton stated that there is an opportunity to expand the capacity and energy production of the Project while utilizing the same water resource. It stated that the rating of the original and most recent generating equipment installed at the Project was undersized for the available streamflow. Acton stated that granting the proposed surrender would eliminate the opportunity for modernization and expansion of the Project's energy production. Acton believes that past

investments should be preserved and not diminished, especially due to the significant amounts of effort and money invested in the Project.

In addition, Acton stated that seeking means to return to operation should not be cursory, and the applicant has not exhausted available opportunities to find an economic means to restore the Project to operational condition. It stated that there are parties with sufficient expertise and interest to assist WRMM in finding appropriate technical solutions, or other parties who are willing to explore commercial agreements, which would preserve the exemption and return the generating unit to operation.

Acton stated that voluntary surrender should not become a means to neglect continuing project responsibilities, including mitigating environmental damage and/or maintaining public safety, dam safety, flood response, and minimum flows. Acton also requested that conditions be mandated to ensure public safety, dam safety, and minimum flow responsibilities. As stated in section E.3, the MADEM would assume jurisdiction of the dam and associated appurtenances following the surrender, ensuring public safety and dam safety. The MADEM and D2SI-NYRO concluded that the facility is in safe and adequate condition; therefore, this issue will not be addressed further in this EA.

The Department of the Interior's (DOI) late intervention was filed to secure its "party" status in this proceeding and was granted by the Commission with a notice issued on March 12, 2003. The DOI stated that 29 miles of the Sudbury, Assabet, and Concord Rivers were federally designated as a Wild and Scenic River in April 1999. The rivers are administered by the Secretary of the Interior, through the NPS, in cooperation with the Sudbury-Assabet-Concord River Stewardship Council. Because the Project is directly upstream of the stretch of the Assabet River designated Wild and Scenic, Interior has stated that Project operations directly affect water quality within that stretch.

The Interior described its water quality concerns, due to high nutrient loads, especially during low summer flow. It stated that the bypassed reach includes almost a mile and a half of high quality habitat, and there are wetlands associated with the impoundment; both of which are affected by the flow regime through the Project.

Summary of Comments on the Application

The FWS submitted comments on the proposed surrender, and a request for cooperating agency status. In a telephone conversation with staff on December 31, 2002, Melissa Grader of the FWS stated that the FWS did not need cooperating agency status and was satisfied with the opportunity to review the EA during its 30-day public comment period. The FWS' main concern was the aquatic habitat and water quality in the Assabet River above and below the Ben Smith Dam. It stated that there is high quality habitat in the reach of the river presently bypassed by the project. The FWS also stated that there are wetlands associated with the Ben Smith Impoundment that would be

negatively impacted if the water level were artificially manipulated (see sections J.2 and K.1).

The water quality issues were in regard to three sewage treatment plants upstream of the Ben Smith Dam in the cities of Westboro, Marlborough, and Hudson. The FWS stated that the discharge permits for these facilities were granted based on a minimum flow in the Assabet River; and if flows are interrupted, the resultant lack of dilution flow could seriously impair water quality. In particular, the FWS is concerned with the amount of water WRMM is diverting, and its impact on water quality. Water resources, including water quantity and quality, are discussed in sectionsJ.3 and K.2.

The FWS provided preliminary recommendations, including that the exemptee should develop a Flow Management Plan, in consultation with the appropriate Federal and state agencies, to specify how flow would be managed through the Ben Smith impoundment and Mill Ponds under all water conditions. As previously stated in section G, WRMM and the Town of Maynard Conservation Commission have been coordinating in the development of the Plan. A draft copy of the Plan was provided to the appropriate agencies for comment.

The FWS also recommended two management options for the future operation of the Project. Its initial recommendation was for WRMM to seal off the diversion canal and manage the Mill Ponds as a closed-water system. Its second recommendation was to modify the gatehouse gates to allow some surface flow into the Mill Ponds under high inflow conditions (e.g. Ben Smith Impoundment level >177.5 feet). These management options are discussed further in sections F and K.

The MADFW submitted comments, and a request for cooperating agency status. The MADFW letter included the same comments, as the May 6, 2002 FWS letter, described above. In addition to the filed comments, during a telephone conversation with staff on December 20, 2002, Dr. Caleb Slater of the MADFW recommended dam removal to benefit fish resources (see section K). In a telephone conversation with staff on January 21, 2003, Dr. Slater stated that they were satisfied with the opportunity to review the draft EA during its 45-day public comment period and did not need additional involvement due to its request for cooperating agency status.

In its January 7, 2003 letter, the FWS stated that its issues of primary concern were aquatic habitat and water quality, and the impact the proposed surrender would have on implementing fish passage at this site in the future. The FWS proposed the following alternatives for analysis: (1) permanently close the canal gates and manage the Mill Ponds as a closed-water system; (2) remove the Ben Smith Dam; (3) lower or breach the Ben Smith Dam; (4) develop a legally-binding Flow Management Plan, in coordination with stakeholders; and (5) denial of surrender, or transfer of exemption to a new owner.

These alternatives are discussed in sections F, G, H, and K. The FWS also recommended that the minimum flow condition of 39 cfs be included in the surrender.

The Massachusetts Historical Commission (MHC) filed a letter, dated May 7, 2002, stating that the project site appears to be in the Assabet Mills Area, an area that is included in the MHC's *Inventory of Historic and Archaeological Assets of the Commonwealth*. The MHC was unable to determine what effect the proposed project would have on historic properties without further information, specifically whether there would be any physical work associated with the proposed surrender. See sections J.9 and K.7 for further information on cultural resources.

The U.S. EPA, in their letter dated May 8, 2002, stated that the Assabet River suffers from severe levels of eutrophication due primarily to wastewater sources of phosphorus and the numerous impoundments that reduce the flow velocity in the river. The EPA stated that any artificial regulation of river flow that increases the frequency and/or duration of low flows has the potential to undermine efforts to restore the river. In addition, the EPA stated that the Maynard Mills has not complied at all times with the required minimum flow, as evidenced in the Organization for the Assabet River's documentation (see comment addressed below).

The EPA stated that the exemptee should be required to conduct a comprehensive evaluation of alternatives that would minimize or eliminate the need to divert flow from the Assabet River. It believes that significantly reducing Assabet River flows in order to flush the Mill Ponds of unwanted vegetation is not an acceptable alternative, and that flow over the Ben Smith Dam should be substantially equal to the flow into the Ben Smith Impoundment at all times. The EPA suggested that non-flow dependent management alternatives for the Mill Ponds should be fully evaluated. All management scenarios that include any flow diversion from the Assabet River need to incorporate the necessary instrumentation and operational capabilities to ensure that adequate flows are maintained in the main stem of the river at all times. Various management alternatives are discussed in sections F, G, H and K.

The EPA also stated that as fish passage barriers downstream of this project are removed, providing fish passage at this facility may become a priority in the future and that the owner of the facility should maintain responsibility for providing fish passage facilities. Installation of fish passage facilities is addressed in Section H.3.

Mr. Robert M. Greenough, of Assabet Sand & Gravel, submitted comments which stated that he wanted regulations to allow a proper flow of water in the Assabet River to maintain existing uses downstream. He stated that his wash plant lost eight operating days in the past year due to lack of water in the Assabet River. Water resources are discussed in Sections J.3 and K.2.

The MADEP stated in its letter that the Assabet River is currently the focus of a state developed Total Maximum Daily Load (TMDL) evaluation in response to the river being on the State of Massachusetts' 303d list for impaired waters.[6] The river suffers from excessive nutrient loading, resultant problematic plant growth, and limited and impaired water uses. The river does not meet its classification for uses as dictated in the State of Massachusetts' Surface Water Quality Standards (MSWQS). We address this issue in section J.3.

The MADEP stated that the Assabet River is limited in its size and is subject to repeated low flow conditions which exacerbate the water quality problems in the river and maintenance of sufficient stream flow is paramount to the ultimate recovery of the river. The MADEP also stated that the diversion has in the past reportedly resulted in water quality problems in the river and that the future recovery of the river demands that the river flow be maintained at levels sufficient to support aquatic life and to foster acceptable water quality in the Assabet River.

The MADEP requested that any final decision on the proposed surrender: (a) ensure that the operation of the dam and the diversion structure not interfere with attainment of water quality and habitat goals for the Assabet River as required in the MSWQS; (b) require the applicant to develop a flow management plan to ensure compliance with the MSWQS and that such a plan be discussed, reviewed, and negotiated with the MADEP and other agencies; and (c) address alternatives to the diversion of the river and the use of the Mill Ponds, including, but not limited to, draining and filling the ponds and ceasing the diversion to the ponds. Water resources are addressed in sections J.4. and K.2. and alternatives are addressed in sections F, G, H and K.

The OAR recommended that we condition the proposed surrender to maximize flow in the Assabet River during the annual low flow period, and restore the river's natural flow regime, to the extent possible, on a year-round basis, in the river reaches affected by the Project. It stated that the best way to achieve maximum flow in the river would be to disconnect the Mill Ponds from the Assabet River. The river needs all available flow to protect fish and other aquatic life, improve water quality, and support recreational uses, and the Mill Ponds no longer need the flow to generate electricity. OAR stated that drawdowns by WRMM during the low flow period and other flow manipulations contribute to the Ben Smith Impoundment's weed and odor problems. The

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[6] The State of Massachusetts has reported the following water quality impairments to the EPA: Organic Enrichment/Low Dissolved Oxygen; Taste, Odor, and Color. Source: EPA Website: http://oaspub.epa.gov/pls/tmdl/enviro.control?p_list_id=MA82B-06&p_cycle=1998.

OAR stated that during the summer, the river consists primarily of nutrient-rich wastewater effluent discharged by the upstream sewage treatment plants.

OAR stated that the Assabet River does not meet state water quality standards because of a cultural eutrophication problem, and as a result, the river is the subject of an ongoing nutrient TMDL evaluation. OAR described the eutrophication problem as particularly severe in the impounded or pond-like reaches of the river. In the Ben Smith and other Assabet River impoundments, nuisance aquatic plants and algal mats grow prolifically because the river flows more slowly, allowing aquatic plants and algae more time to absorb nutrients from the water column. The slow current and lack of flushing during the growing season, especially from late July through mid-September, also allows submerged aquatic plants, floating algal mats, and duckweed to become firmly established. The nuisance vegetation produces large diurnal changes in dissolved oxygen (DO) concentrations as aquatic biota produce oxygen during daylight conditions and respire at night, reducing oxygen levels at night. Beginning in mid-summer, low DO concentrations and offensive odors are likely to occur when the aquatic vegetation begins to die and decay. Dramatic DO concentration changes, particularly very low DO levels, can be lethal to fish and bottom-dwelling organisms. OAR also stated that the dense stands of submerged aquatic plants and thick floating mats of algae and duckweed make boating and fishing very difficult, and very unappealing.

OAR also stated that there is no evidence that WRMM has complied with the 39 cfs minimum flow release condition in its exemption. OAR provided written landowner observation accounts of strong water flow through the power canal, while there was low water levels in the Ben Smith Impoundment. Specifically, in the summer of 1998, the gates were reportedly left open for some unknown period until September 6, 1998. At this time, the gates were partially closed by WRMM, apparently at the request of a nearby resident who lives adjacent to the impoundment. The OAR's comment letter included a detailed account of the resident's observation of water level and flow in the impoundment and canal. As previously stated, we do not dispute or confirm the information provided describing low flow and non-compliance issues; however, the Commission has no record of any complaints or instances of past non-compliance associated with the Project.

OAR recommended that WRMM should evaluate the environmental impacts and costs of flow management alternatives. OAR suggested the following alternatives: keeping all of the flow in the river, maintaining existing Ben Smith Dam in good condition, partially removing dam, and completely removing dam. OAR stated that WRMM and any future owners should be required to provide fish passage at the dam for migrating fish, such as alewives and shad, when these fish can reach the dam (i.e. when fish passage is provided at all downstream dams). OAR also stated that the Commission should not surrender the Project until WRMM has completed work to meet the conditions of the surrender and entered into a legally enforceable agreement with the appropriate

state and federal agencies to ensure that WRMM and any future owners of the Project facilities provide future fish passage when migrating fish can reach the base of the Ben Smith Dam. We analyze alternatives that will meet OAR's request and address them in section J of this document. We also addressed the construction of new fish passage facilities in section H. 3, of this document.

The NPS letter dated June 17, 2002, stated that the conditions in the exemption which protect flow in the Assabet River need to be maintained, even though regulation of dam operations may change as a result of the proposed surrender. The NPS further described the Wild and Scenic River designation, as discussed above in the Interior's Intervention. The NPS also described the Assabet River's 303(d) listing. The NPS is concerned with the impaired water quality of the Assabet River, and the impact on water quality that results from the reduction of flow due to the diversion at the Ben Smith Dam. The NPS believes that the minimum flow requirements must be maintained and authority for their enforcement be transferred to the appropriate state or federal agency at the time of surrender. In addition, the NPS believes that WRMM should be required to install equipment and do the necessary maintenance so that water flow can be measured above and below the dam, and gates can be operated to provide required bypass flows.

J. AFFECTED ENVIRONMENT

1. General Description of the Project Area

The Project is located on the Assabet River, in the Town of Maynard, Middlesex County, Massachusetts. Maynard is in central eastern Massachusetts, approximately 25 miles northwest of Boston. The city is approximately 5.24 square miles in area, with a population of 10,037, according to a 2001 census.[7] The Clock Tower Place Office Park facility is a commercial office complex, approximately 45 acres in area. The complex consists of 13 commercial buildings which are leased to various tenants.

2. Vegetative Cover and Wetlands

The vegetative cover adjacent to the impoundment on the Assabet River above the Ben Smith Dam consists of bordering vegetated wetlands and hardwood species of trees where the land is undeveloped. A small portion of the area is also composed of landscaped yards, associated with houses located adjacent to the impoundment. Associated with Taylor Creek, a large tributary that discharges directly in to the Ben Smith Reservoir, is a 2.9 acre backwater area with associated marsh vegetation. Based

[7] The Maynard Website: **http://web.maynard.ma.us/atglance.htm** (April 3, 2003).

on the U.S. Fish and Wildlife Service National Wetlands Inventory map (Maynard Quadrangle) the backwater area is classified as a palustrine, unconsolidated bottom, permanently flooded wetland. This area is largely open water. However, field observations indicate that emergent vegetation populates the wetland margins. The plant species found in this area are consistent with those associated with the Ben Smith Reservoir.

There are narrow wetlands adjacent to the Assabet River between the Ben Smith Dam and the tailrace. Wooded swamps and emergent wetlands constitute the most abundant community type. Wooded swamps are dominated by red maple, silver maple, elm, and ash in the overstory or canopy (DEC, 1983). Shrub and herbaceous species primarily include red osier dogwood, buttonbush, wild rose, sensitive fern, royal fern, purple loosestrife, and tussock sedge (DEC, 1983). Similar to wooded swamps, emergent wetlands are also scattered along the banks of the river. The most abundant plant species in these areas are water willow, sensitive fern, purple loosestrife, cattail, and tussock sedge (DEC, 1983). Much of the area along the Assabet River, downstream of Ben Smith Dam (BSD) consists of maintained lawns. Immediately upstream of the tailrace, for a short distance, the river "banks" are concrete retaining walls.

The banks of the power canal are predominantly wooded or landscaped. Such woody plant species as red maple, alder, highbush blueberry, and sweet pepperbush are present (DEC, 1983). Wetlands associated with the canal portion of the project area occur at the mouth of the canal just south of the Ben Smith Dam. This area consists of emergent wetlands dominated by water willow, cattails, sensitive fern, and purple loosestrife.

Wetland and other vegetation associated with the Mill Ponds is limited due to landscaping and consist of primarily of grassed lawns. Scattered sites of emergent vegetation consist primarily of water willow and various grasses. Woody plant species including alder, sweet pepperbush, highbush blueberry, red maple, and weeping willow are also present (DEC, 1983).

3. Water Resources

The Assabet River starts in Westborough and ends in Concord - dropping 320 feet over the course of nearly 32 miles. The watershed encompasses 177 square miles and contains nine tributaries. Over 170,000 people reside in the watershed.[8]

According to the MADEP's and OAR's comment letters, the Assabet River is currently the focus of a state developed TMDL evaluation in response to the river being

[8] OAR's Website: **http://www.assabetriver.org/map** (Retrieved April 3, 2003).

on the State of Massachusetts 303(d) list for impaired waters. The MADEP stated that the river suffers from excessive nutrient loading, resultant problematic plant growth, and currently does not meet the MSWQS for Class B waters as designated. The MSWQS for class B waters are outlined in Table 2.

According to the MADFW, upstream of the Ben Smith Dam, there are three point-source dischargers (sewage treatment plants from the cities of Westboro, Marlborough, and Hudson). The Town of Maynard discharges its treated sewage into the Assabet River downstream of the Project's tailrace. The MADFW stated that the discharge permits for the upstream facilities were granted based on a minimum flow in the Assabet River, the 7Q10. The 7Q10 refers to the lowest consecutive seven day streamflow that is likely to occur in a ten-year period. This measurement is often used in setting discharge limits for the National Pollutant Discharge Elimination System water quality permits (MADFW, 2002). The MADFW also stated that if flows are interrupted, the resultant lack of dilution flow could seriously impair water quality.

Table 2. Massachusetts DEP Class B Water Quality Standards*

Parameter	Standard
Dissolved oxygen	5.0 mg/l and 60% saturation
pH	6.5-8.3 for inland waters
Nutrients	"control cultural eutrophication"
Temperature	28.3 C and less than 2.8 C deviation
Solids	Not impair use, cause aesthetically objectionable conditions, impair benthic biota, or degrade the chemical composition of the bottom

*MADEP 1993 Massachusetts Surface Water Quality Standards - 314 CMR 4.00 1993 (OAR, 2002).

The OAR has been monitoring the summer water quality of the Assabet River since 1992, utilizing an EPA approved method. As part of the water quality monitoring effort, DO levels are recorded at numerous sites on the Assabet River, including at the White Pond Road bridge, upstream of the Ben Smith Reservoir, and at the U.S. Geological Survey's Maynard gauging station, just downstream of the Project. OAR has documented DO readings on the Assabet River that did not meet the state requirements outlined above.[9] During the years 2000 and 2001, DO readings were also recorded from several sites in the Ben Smith Reservoir at various depths. Table 3 summarizes OAR's DO readings for the Assabet River above the Ben Smith Reservoir, in the Ben Smith

[9] Organization for the Assabet River, Website: http://www.assabetriver.org/wq (April 21, 2003).

Reservoir, and downstream of the Project at the U.S. Geological Survey's Maynard, Massachusetts gauging station for the years 2000 and 2001.

The Project's exemption includes a condition which states that "the construction, operation, and maintenance of the exempt project must comply with any terms and conditions that any Federal or state fish and wildlife agencies have determined are appropriate." A letter from the U.S. FWS, dated August 30, 1983, is attached to the October 1983 exemption and includes one such condition. This condition states that "the Exemptee shall provide an instantaneous flow release at the project dam of at least 39 cfs or inflow to the project area, whichever is less, to maintain downstream aquatic habitat."

WRMM currently diverts water from the Assabet River for fire suppression and to maintain the Mill Ponds' water level.[10] According to WRMM's Additional Information Response filed July 31, 2002, the Mill Ponds provide a supplemental source of fire suppression. Two pumps for fire suppression are located in the Mill Pond Office Complex. These pumps are a supplemental system to the public water supply. During a March 31, 2003 telephone conversation with Stephen Kulik, Fire Chief for the Town of Maynard, Chief Kulik stated that the Mill Ponds provide a supplemental source of fire protection for the Clock Tower Place Office Complex. Chief Kulik also stated that in case of fire in the office buildings or parking garage, the fire sprinklers would be provided water simultaneously from the Town's water main and from the Mill Ponds fire pumps. Chief Kulik stated that the Town's water system could not supply all the necessary water in case of an emergency and water must remain in the Mill Ponds to provide the necessary fire suppression capabilities.

[10] Between about September 2, 2001 and September 14, 2001, gates to the Mill Ponds had been left open, diverting water from the Assabet River to the Mill Ponds, resulting in a drawdown of the Ben Smith Reservoir below the dam's crest resulting in only leakage flows to the bypass reach. (As reported by the OAR on page 17 of their Water Quality Monitoring Program Final Report - Summer 2001, Issued March 2002 and revised in July 2002).

Table 3. Dissolved oxygen levels of the Assabet River taken at the White Pond Rd. Bridge (WPRB), in Ben Smith Reservoir (BSR) and at the U.S. Geological Survey's Maynard, Massachusetts Gauging Station (USGS) as reported by the Organization for the Assabet River*

Location	Date of Reading	Average/ Actual DO in mg/l **	Max. /Min. am reading DO in mg/l	All Within State Standards?	Flow Stage / cfs
WPRB	June 17, 2000	7.57		Y	
BSR	June 17, 2000	7.15	7.72 / 5.63	Y	
USGS	June 17, 2000	8.29		Y	2.85 ft / 260
WPRB	July 15, 2000	9.67		Y	
BSR	July 15, 2000	6.19	7.46 / 0.46	N	
USGS	July 15, 2000	6.24		Y	1.45 ft / 43
WPRB	Aug 19-20, '00	7.63		Y	
BSR	Aug 20, 2000	7.60 (am	8.76 / 3.61	N	
USGS	Aug 19-20, '00	8.24		Y	1.94 ft / 90
WPRB	Sept 16-17, '00	5.7		Y	
BSR	Sept 16-17, '00	5.58	6.38 / 4.69	N	
USGS	Sept 16-17, '00	7.6		Y	2.14 ft / 120
WPRB	October 21, '00	7.71		Y	
BSR	October 21, '00	7.85	8.14 / 7.20	Y	
USGS	October 21, '00	9.71		Y	1.96 ft / 88
WPRB	June 9, 2001	6.79		Y	
BSR	June 10, 2001	6.22	7.83 / 0.24	N	
USGS	June 9, 2001	8.07		Y	2.28 ft / 134
WPRB	July 21, 2001	8.97		Y	
BSR	July 21, 2001	6.75	9.34 / 0.34	N	
USGS	July 21, 2001	7.80		Y	1.68 ft / 57
WPRB	Aug 11, 2001	6.17		Y	
BSR	Aug 12, 2001	3.78	5.31 / 0.11	N	
USGS	Aug 11, 2001	6.03		Y	1.30 ft / 27
WPRB	Sept 15, 2001	5.75		Y	
BSR	Sept 16, 2001	4.67	5.70 / 1.18	N	
USGS	Sept 15, 2001	7.31		Y	1.45 ft / 37
WPRB	Oct 13, 2001	11.09		Y	
BSR	Oct 13, 2001	9.45	10.53 / 6.63	Y	
USGS	Oct 13, 2001	8.66		Y	1.48 ft / 40

* Source: Organization for the Assabet River, Website: http://www.assabetriver.org/wq (April 21, 2003)

** Average reading applies to readings taken in Ben Smith Reservoir, all other readings are actual.

4. Fishery Resources

The fishery of the Assabet River in the vicinity of the Project would be classified as a warmwater fishery. Pool and riffle habitat are present in the project area. Upstream

of the Ben Smith Dam, the Assabet River constitutes an extensive, shallow, slow-moving impoundment. Below the Ben Smith Dam in the bypass reach, there is approximately 5,000 feet of riffle with two pools of approximately 500 to 1,000 feet in length.

The fishery of the Mill Ponds and the power canal are expected to be similar to those of the Assabet River in the vicinity of the Ben Smith Dam. A list of fish species likely to occur in the Assabet River is included in Table 4.

Table 4. Fish Species Likely to Occur in the Assabet River*

American eel	Chain pickerel	Redfin pickerel
Banded sunfish	Creek Chubsucker	Redbreast sunfish
Black crappie	Fallfish	Spottail shiner
Blacknose dace	Golden shiner	Tiger muskie
Bluegill	Green sunfish	White perch
Brook Trout	Largemouth bass	White sucker
Brown Trout	Pumpkinseed	Yellow bullhead
Brown bullhead	Rainbow trout	Yellow perch
Carp		

*Sources: Application for Exemption, Digital Equipment Corporation, May 31, 1983
OAR's Website 4/03: http://www.assabetriver.org/streamwatch/fish_a.html

5. Terrestrial Resources

The Assabet River, one of three rivers that create the Sudbury-Assabet-Concord Watershed, flows north approximately 31 miles from its headwaters in Westborough, through the now densely developed urban centers of Northborough, Hudson and Maynard, to its confluence with the Sudbury River at historic Egg Rock in Concord, where the Concord River begins. The Assabet River flows over nine dams and meanders through historic centers of old mill towns. At least 16 named streams or tributaries flow into the river. Overall, the Assabet River sub-basin encompasses 177 square miles and provides much of the summer baseflow of the mainstem Assabet River.

The Assabet River supports a wide array of rich aquatic and riverine habitats. The project area represents a diverse mix of wildlife including migratory birds such as waterfowl, wading birds, raptors, shorebirds, passerines, as well as resident mammals, reptiles, amphibians, fish and invertebrates. Nearby Assabet River NWR is included in the Sudbury-Assabet-Concord Inland River priority for a protection Focus Area under the North American Waterfowl Management Plan (NAWMP).

The riverine and lacustrine portions of the project area (Assabet River and Ben Smith Reservoir) also include a diverse array of vegetation including hardwood stands comprised of red maple, alder, highbush blueberry, and sweet pepperbush (DEC 1983). Various aquatic plants such as cattail, water willow, sensitive fern, and purple loosestrife

occur within or around the various emergent wetlands in the area. Vegetation associated with the Mill Ponds is limited due to landscaping and consists primarily of grass lawns.

Habitat conditions within the project area are suitable for three terrestrial species designated by the State as species of concern: the blue-spotted salamander, the spotted turtle, and the elderberry longhorn beetle. The blanding's turtle is listed by the State as threatened and could also occur in the project area based on current habitat conditions in the Mill Ponds. However, there have been no documented occurrences of any of these species within the project area. The most recent observations of each in Massachusetts occurred in 1964, 1992, 1997, and 2000, respectively.[11]

6. Threatened and Endangered Species

Current data indicate that no listed or proposed threatened or endangered species or designated or proposed critical habitats are known to occur in the project area. Therefore, no issues have been identified for any alternative that require consultation under Section 7 of the ESA.

7. Land Use and Recreation

Due to its close proximity to the Maynard town center, most of the project area is developed. Land uses surrounding the Ben Mill Impoundment are predominantly residential, with only small parcels of undeveloped land remaining in the project area. The open spaces surrounding the project appear to be vegetated wetlands, landscaped lawns, and wooded areas with the remaining lands covered by forest. Approximately one mile of the Assabet River between the dam and the tailrace is crossed by four bridges and bordered by commercial establishments, single and multifamily homes, and apartment complexes. The 18.75-acre, 2,200-foot-long Ben Smith Impoundment is bordered by commercial establishments, residences, and undeveloped lands. The Mill Ponds are surrounded primarily by the Clock Tower Place Office Complex, parking lots, and several multifamily residences. The power canal is bordered by residences.

Recreational opportunities around the 18.75-acre Ben Smith Impoundment and along the Assabet River include boating, canoeing, and recreational fishing, but recreation data figures and staff observation indicate that visitor use is light. The original Application for Exemption from Licensing, filed May 31, 2003, states that "some fast water canoeing occurs during spring runoff but numerous low bridges limit passage." However, during a site visit on March 27, 2003 (filed May 14, 2003) staff did not observe any low bridges that would hinder boating activities in the project area. Light boat access

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[11] Massachusetts Division of Fisheries and Wildlife, Natural Heritage and Endangered Species Program Website: http://www.state.ma.us, April 3, 2003.

to the Ben Smith Dam impoundment is easily gained just upstream of the entrance to the power canal at the Ice House Landing Conservation area. An unimproved boat ramp is also available near the White Pond Road bridge, located at the upper end of the Ben Smith Impoundment. Several canoe put-ins also exist upstream of the project.

No recreation occurs on the 18.23-acre Mill Pond system due to its close proximity to Clock Tower Office Complex. In comments submitted on May 10, 2002, OAR stated that "the Mill Ponds provide…very limited water-based recreational opportunities. To our knowledge, any water-contact activity such as boating, swimming, wading, and skating is…prohibited by CTP [Clock Tower Place] because of public health and safety concerns." During the dam safety inspection performed by the NYRO on August 23, 2002, the report stated that the Mill Ponds are "not suitable for recreation due to [their] location within the Clock Tower Industrial Complex."

8. Scenic and Aesthetic Resources

On April 9, 1999, the NPS designated approximately 29 miles of the Sudbury, Assabet, and Concord Rivers as "Wild and Scenic." The rivers are recognized for their outstanding history, scenery, recreation values, and place in American Literature. The "Wild and Scenic" designation includes approximately 4.4 miles of the Assabet River, beginning three and a half miles downstream of the Ben Smith Dam and continues to the river's confluence with Sudbury River at Egg Rock (NPS, 2002).

The Mill Pond project is located in a region of significant cultural importance to American History that contains numerous scenic opportunities consisting of forests, gentle hills, wildlife, and numerous historic properties. With the Assabet River National Wildlife Refuge only a few miles upstream of the project and the historic towns of Concord and Lexington, Massachusetts only a few miles away, a variety of natural, scenic, and historical recreational opportunities exist within close proximity to the project area. The project is bordered by vegetated wetlands, wooded areas, and landscaped lawns. The views of the project are best appreciated by the abutting landowners whose homes overlook the impoundment, which provides a similar setting to other ponds in Massachusetts. The Mill Ponds also provide an enjoyable setting for the visitors and tenants of the Clock Tower Place Office Complex, and for those who take advantage of the path or benches around the ponds. With the vegetation, waterfowl, and other wildlife in and around the impoundment and Mill Ponds, as well as the close proximity of the Assabet River National Wildlife Refuge to the project area, the project offers numerous opportunities for watching and enjoying nature.

9. Cultural Resources

Occupation of the Merrimack River, and its tributary the Assabet River, has existed since prehistoric times, and prior to European colonization, the region in and near

the project area was probably occupied by aboriginal groups associated with eastern Algonquian speakers of Southern New England. Nevertheless, the project area has been heavily disturbed by industrial-era development since the nineteenth century, and there is little probability of intact aboriginal archeological deposits existing within the project area.

The Project is located within the Assabet Mill Area (also described above as Maynard Mill), which is eligible as a historic district for listing in the NRHP. As a consequence, many of the Project facilities are considered historic properties as individual structures, as well as being contributing elements to the Assabet Mill Area historic district.[12] The Assabet Mill Area is significant for its contribution to the woolen industry of New England from the mid 1800s through the first part of the twentieth century and contains fifteen major redbrick buildings that were built between 1854 and 1918, including factory buildings (one which contains the Project powerhouse), offices, machine, and storage houses, boiler house, and inspection, dying, and finishing facilities. It also includes the Mill Clock and Clock Tower.

Assabet Mill was originally established in 1847 by Amory Maynard and William Knight to harness mechanical hydropower along the Assabet River for the manufacture of carpets for trade and sale in the Boston area. The original works consisted of a dam and canal that were constructed in 1847, followed by three wood-framed mill buildings, including a water wheel, built between 1847 and 1855. At the Mill, carpet yarn and carpets were at first made by hand looms and then later mechanically produced on a total of 324 looms. During the first year of production, the Mill produced $110,000 of carpet material, and by 1855 employed 125 workers. At the outbreak of the Civil War, the Mill was reorganized into the Assabet Manufacturing Company and the manufacture of woolen blankets and flannels replaced carpets. Between 1866 and 1893, seven brick buildings were added to Assabet Mill. During this time, the water wheel was replaced with a water turbine, which in turn was replaced with a coal-powered steam engine in 1879. In 1898, the owners of the Mill went bankrupt, and along with other New England and Mid-Atlantic mills, was sold to the American Woolen Company which was to become the world's largest woolen and worsted manufacturer by 1923. Assabet Mill was converted from mechanical and steam power to hydroelectric power in 1902, and also provided electricity to the Town on Maynard for the lighting of streets. Hydroelectric power was used at the Mill until 1968. Production of woolen products at Assabet Mill continued during the first part of the twentieth century, but it nearly closed down during the Great Depression. At the outset of World War II, the Mill was reinvigorated with the production blankets, overcoats, and suiting for the military. By the close of the War,

[12] A National Register of Historic Places nomination form was submitted to the Massachusetts Historical Commission by the Maynard Historical Commission in June 2000. The source of historical narrative above was taken from this nomination form.

synthetics reduced the demand for wool and the Mill was sold in 1953 to Maynard Industries, Inc. of Worcester who planned to the use the space for a variety of businesses. In 1955, some of the mill space was occupied by the Raytheon Company and DEC in 1957, of which the latter purchased the Mill in 1974. Overall, Assabet Mill was a major economic impetus for the development of the Town of Maynard resulting in the construction of schools and hundreds of houses for its employees.

The existing Mill Pond Hydroelectric Project constitutes the area of potential effects for this proposed surrender and consists of historic properties associated with hydroelectric generation of Assabet Mill that includes the Ben Smith Dam, Ben Smith Impoundment, power canal, associated Upper and Lower Mill Ponds, Canal Gate House, and associated water conveyance features that includes a seven-foot penstock, power station, and associated generator and turbine. The Ben Smith Dam was built prior to 1900. The power station is located within one of the redbrick Mill buildings (Building 4), built in 1902, and contains a Rodney Hunt Type E turbine installed in 1917 and a General Electric Company generator which was manufactured in 1899. The Canal Gate House, a well-preserved wood-framed structure with a gabled roof, was built during this period, as well. As mentioned above, full hydroelectric generation came to Assabet Mill in 1902 and continued until 1968. DEC revitalized the use of the historic Assabet Mill hydroelectric facilities in the 1980s through a small license exemption order, granted by the Commission in 1983. Internal changes were made to the hydroelectric facilities, but the early-1900s exterior portions were left in their original condition.

On January 4, 1983, the Massachusetts Historical Commission (MHC), acting on behalf of the Massachusetts State Historic Preservation Office, filed a letter with the Commission stating that they considered the reuse of the historic Assabet Mill hydroelectric facility as a positive rehabilitation program and that the proposed license exemption would have a no adverse effect on historic properties associated with the Project.

On June 4, 2002, we requested additional information from WRMM, including a description of any physical work that was proposed. We requested that WRMM provide this information to certain agencies, including the MHC. According to WRMM's Additional Information Response filed July 31, 2002, no physical work was expected for the proposed surrender. On August 8, 2002, WRMM provided the MHC with its Additional Information Response. Based on the response from WRMM, that none of the project facilities would be physically affected, the MHC recommended that the proposed project is unlikely to affect significant historic or archaeological resources.

K. ENVIRONMENTAL ANALYSIS

1. Vegetative Cover and Wetlands

a. Surrender with Dam Removal, Lowering, or Breaching

Dam removal, lowering, or breaching would result in a drawdown of Ben Smith Reservoir and the dewatering of the Mill Ponds. If a drawdown of the project area wetlands is required, it would affect fringe wetlands and other adjacent wetlands that derive some hydrologic augmentation from project waters. Under this alternative, all wetlands with a hydrologic dependence on the Mill Ponds would be permanently converted to upland habitat. As water is removed from the wetland environment, it is expected that the soils would retain moisture for at least part of the first growing season. Exposed areas would provide excellent growing conditions combining sun exposure, moisture, and nutrients from the sediments. Initially, species with existing seed sources would likely occupy exposed areas. Over time, upland species may be able to colonize exposed substrates. Pioneering upland species, however, would be starting from seed and would not likely supplant arboreal wetland species or well-established herbaceous wetland species.

Taylor Creek is a large tributary to the Assabet River which discharges directly into the Ben Smith Reservoir. At the mouth of Taylor Creek is a backwater area with associated marsh vegetation. Based on the U.S. Fish and Wildlife Service National Wetlands Inventory map (Maynard Quadrangle) the backwater area is classified as a palustrine, unconsolidated bottom, permanently flooded wetland covering about 2.9 acres. This area is largely open water. However, field observations indicate that emergent vegetation populates the wetland margins. The plant species found in this area are consistent with those associated with the reservoir's margins. Consequently, impacts to this habitat would be expected to mirror the wetland drawdown impacts described for the reservoir.

In the Ben Smith Reservoir, aquatic emergent plant communities would experience the greatest impact. This community, however, would likely reestablish at the edge of the new water elevation. The impact to arboreal wetland communities should be less significant. The fringe buttonbush/willow communities would experience the greatest change in hydrologic conditions. Buttonbush has a high moisture use requirement but has some tolerance for drought conditions. In the absence of a persistent water source, buttonbush communities may transition to upland plant communities over time. Willow has less drought tolerance but is resilient and regenerates rapidly. Willows may be expected to quickly reestablish proximal to the new shoreline.

Forested wetland communities develop in areas that experience regular seasonal drawdowns based on the normal hydrologic balance. Only a very small number of tree

species can tolerate permanent flooding. The predominant species associated with the project wetlands include red maple, silver maple, elm, and ash. All of these species have some tolerance for drought (Thunhorst, 1993) and would be expected to survive a drawdown.

After surrender of the exemption, future proposals or requirements concerning dam removal or lowering would be governed by state and local law, and whatever federal laws may apply outside the context of the Federal Power Act. After surrender, the MADEM would have jurisdiction over Project facilities, including dam removal and lowering.

b. Surrender with Modification of Canal Gatehouse

Physical work conducted at the gatehouse during the installation of a fixed weir, may result in short term impacts to the vegetation in the power canal. However, we would not expect any long-term change to the vegetation and wetlands in the project area due to this modification. We do not anticipate any change to the vegetative cover or the wetland communities. Water would continue to be diverted from the project's reservoir to the Mill Ponds at the same frequency it is today under current operations, albeit at a lesser magnitude (See Water Resources, Section K.2).

c. Surrender with Sealed Canal and Manage Mill Ponds as Closed-Water System

This alternative may result in a drawdown of Mill Pond waters, dependent upon WRMM's management of the Mill Ponds as a closed water system. This may impact the scattered emergent vegetation associated with the ponds. The physical work associated with this alternative would temporarily impact the vegetation present in the power canal. We would not expect any long-term impact to the vegetation and wetlands associated with the Ben Smith reservoir due to this modification. However, if WRMM's management of the Mill Ponds resulted in unstable surface water elevations in those ponds, the associated plant communities may be negatively affected.

d. Surrender with no Environmental Measures

Surrendering the project without any environmental protection mitigation or enhancements (PM&Es) would result in the applicant's ability to dewater the project's reservoir and associated wetland areas at their discretion. Assabet River waters could be released from the Ben Smith Reservoir into the Mill Ponds through the existing gate structures, a rate that could dewater the reservoir and bypass reach. If a drawdown of the project's reservoir and associated wetlands occurred, it would affect fringe wetlands and other adjacent wetlands that derive some hydrologic augmentation from project waters. Under this alternative, all wetlands with a hydrologic dependence on the Ben Smith Reservoir could be permanently converted to upland habitat at the applicant's discretion.

e. No Action

This alternative would require the project to be returned to operating status. Because the vegetative cover and wetlands have been developed and/or adapted to the operation regime of the project, the continued operation of the project should have no effect on those resources.

2. Water Resources

a. Surrender with Dam Removal, Lowering, or Breaching

According to OAR's 2002 Stream Watch and Water Quality Monitoring Program, Final Report - Summer 2002, water temperature of the Assabet River appear to meet the Massachusetts DEP Class B Water Quality Standards.[13] However, excessive nutrient loading from wastewater treatment facilities contributes to a high biological oxygen demand (BOD) and likely has a negative affect on the Assabet River's dissolved oxygen (DO) levels and subsequently its water quality. Additionally, impoundments like the Ben Smith Reservoir, and sloughs along the river, are likely affected by eutrophication, resulting in heavy aquatic macrophyte growth which compounds the negative effect on DO levels diurnally. The Project's dam likely helps to offset these negative impacts by increasing the DO levels in the Assabet River downstream of the dam, through spill. As water flows over the dam's crest and plunges into the pool below, the water's surface area is increased and atmospheric air is entrained into the water below, likely increasing DO levels of the Assabet River. This increase in DO levels is likely to be to a greater extent than would occur if the dam were removed or breached and the Ben Smith Reservoir was converted to a free flowing riverine reach.

[13] OAR's Website: http://www.assabetriver.org/wq/oar-wq-2002-report.pdf (April 29, 2004).

If the dam were breached or removed, a free-flowing riverine reach located between the Ben Smith Dam and the White Pond Road bridge would be created and the DO levels in this new riverine reach would likely be improved over the DO levels currently experienced in the BSR. The area immediately upstream of the Ben Smith Dam is of low gradient, as represented in Figure 3, as a result and following dam removal, this new section of riverine habitat would likely include few areas of riffle. As a result, these limited areas of riffles would also somewhat improve DO levels in the Assabet River much in the same manner that passing over the dam's crest does, albeit not with the same intensity. Additionally, removal of the reservoir would result in a reduction of the aquatic macrophyte growth which likely is resulting in diurnal fluctuations in DO levels. Therefore, removal or breaching of the Ben Smith Dam could result in an improvement of DO levels over those currently experienced in the Ben Smith Reservoir but arguably may result in a lower DO level downstream of the Ben Smith Dam in the bypass reach, than that which is currently realized with the dam in place. It is however, unlikely that the water quality in the bypass reach would drop below the state standard for DO of 5 mg/L if the dam were removed.

Other considerations concerning dam removal include land disturbing activities that could cause erosion resulting in a discharge of sediments to the stream. Sediments currently trapped behind the dam could be released and discharged downstream which would negatively impact water quality, especially if the sediments were to contain contaminants. Additionally, if the dam were to be removed and the accumulated sediments behind the dam were allowed to be transported downstream, it is likely that they would be re-deposited in the Assabet Project's reservoir (P-7148), potentially having an effect on that project's operations. Therefore, under this alternative, it would be appropriate to develop an erosion and sediment control plan to lessen the land-disturbing activities and address concerns and methods to be used in the handling of the sediments trapped behind the dam. Finally, dam removal or breaching would prevent the diversion of water from the Assabet River to the Mill Ponds. An alternate water source would need to be established to provide the necessary fire suppression for the Clock Tower Place Office Complex. All water would remain in the Assabet River and flow through the bypass reach.

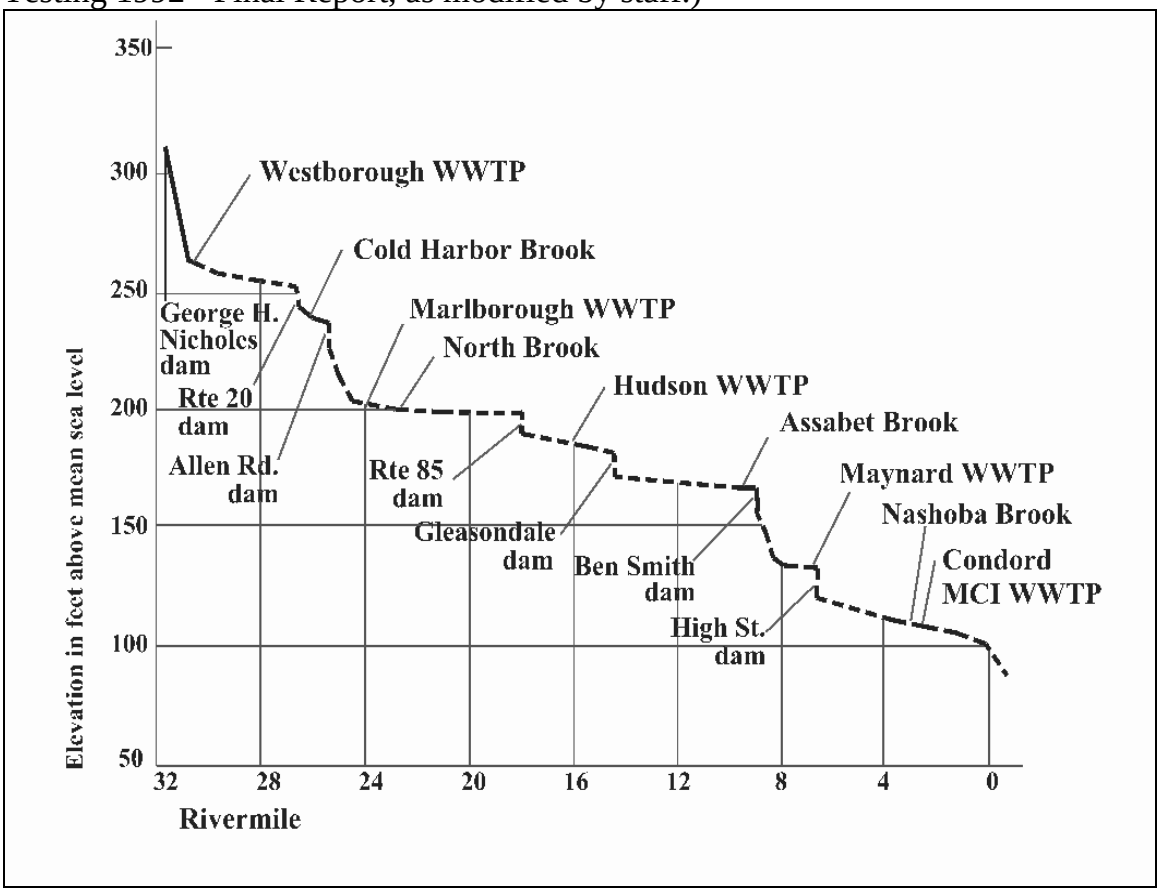
b. Surrender with Modification of Canal Gatehouse

One recommendation provided by the FWS for consideration was to have WRMM modify the canal gatehouse to allow some surface flow into the Mill Ponds under high inflow conditions (e.g. when the Ben Smith Reservoir level is greater than 177.5 feet msl). Given the length of The Ben Smith Dam's crest is 170 feet and has an elevation

177 feet msl.[14] Staff estimates that this suggestion by FWS, would provide approximately 168 cfs to the bypass reach before any flow would be diverted to the Mill Ponds.

Staff have modified this alternative to remove the existing gate structures and install a fixed weir in their place with a set elevation of 177.2 feet msl as opposed to the suggested 177.5 feet msl. This is the elevation staff has estimated to be necessary to ensure a minimum flow of 39 cfs to the bypass reach (See Appendix A).

Figure 3. Assabet River Elevation Profile. (Source: OAR Assabet River Water Quality Testing 1992 - Final Report, as modified by staff.)



[14] By letters dated July 25, 2002 and October 21, 2003, the FWS states that the elevation and length of the BSD's crest may not be 177.0 feet msl and 170-feet-long, respectively, and provides supporting information for their comments. The Commission's (continued) records indicate that the dam's crest is 170-feet-long with an elevation of 177 feet msl; therefore, we have used these to perform our calculation. However, prior to the implementation of any alternative that is dependent on these calculations, the actual elevation and length of the Ben Smith Dam's crest should be confirmed by a licensed surveyor.

Based upon the aquatic base flow (ABF) we have determined that a minimum flow of 39 cfs is adequate to protect the aquatic habitat of the Project's bypass reach and the Assabet River. With a fixed weir set at an elevation of 177.2 feet msl, all flow up to 39 cfs, will be dedicated to the bypass reach. When the reservoir elevation is above 177.2 feet msl, a small percentage (we estimate about7 %)[15] of the flow above the 39 cfs would be diverted to the Mill Ponds. Therefore, this modification should adequately protect the water quality for the protection of the aquatic habitat of the Assabet River. Additionally, the proposal as modified by staff would increase the frequency that water is diverted to the Mill Ponds for fire suppression purposes, as compared to the alternative as suggested by the FWS with a set gate at 177.5 feet msl. Further, with staff's modification, the frequency of the diversion of flows from the Assabet River to the Mill Ponds should mimic current condition, albeit the flows being diverted will not be of the same magnitude. For this reason, we recognize that the possibility exists for the water level in the Mill Ponds to drop below the necessary level for fire suppression and some stagnation may occur during drought years; therefore, we recognize that WRMM may need to secure an additional source of water to supplement the Mill Ponds water supply (see Section K. 2. C), for fire suppression purposes and investigate the need to provide mechanical aeration to the Mill Ponds to protect water quality if deemed necessary.[16] This alternative with staff's recommendations would not result in a material adverse impact to the water quality of the project's discharge. Table 5 displays the mean monthly flows which would be diverted to the Mill Ponds under this alternative as modified by staff.

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[15] The seven percent is estimated by adding the Ben Smith Dam's crest length (170 feet) to the total assumed crest length of a fixed weir that would replace the two 6-foot-wide gates (12 feet) to obtain a new total crest length of 182 feet. By dividing the new total crest length (182-feet) by the crest length of the Bend Smith Dam (170 feet), we were able to establish that by replacing the gate structures with a fixed weir, increased the total crest length by 7 percent as compared to what currently exist at the Ben Smith Dam alone. (170 + 12) = 182.

[16] Assuming the Mill Pond's were square with an average depth of 10 feet with a 45% slope to the banks and a surface area of 18-acres, the Mill ponds would be capable of storing approximately 159-acre-feet of water. Using the projected inflow to the Mill (continued) Ponds for an average August, approximately 62% or the water in the Mill Ponds would be exchanged during that month; which should be adequate to protect water quality in the Mill Ponds. However, during drought years, this rate of exchange may be somewhat less or non-existent and water quality within the Mill Ponds may become impaired.

Table 5. Estimated mean monthly flow to the bypass reach and Mill Ponds and estimated mean monthly storage provided to the Mill Ponds.

Month	Mean Monthly Streamflow (cfs) (a)	Estimated Mean Monthly Flow (cfs) to the Mill Ponds (b)	Estimated Mean Monthly Volume (Acre-feet) Provided to the Mill Ponds (c)	Estimated Mean Monthly Flow (cfs) to the Bypass Reach (d)
January	221.0	12.7	783.4	208.3
February	248.0	14.6	819.8	233.4
March	405.0	25.6	1,575.3	379.4
April	389.0	24.5	1,457.9	364.5
May	240.0	14.1	865.1	225.0
June	155.0	8.1	483.2	149.9
July	73.7	2.4	149.4	71.3
August	62.0	1.6	99.0	60.4
September	63.0	1.7	100.0	61.3
October	91.7	3.7	226.8	88.0
November	151.0	7.8	466.5	143.2
December	196.0	11.0	675.8	185.0

(a) As reported by USGS stream gauge No. 01097000
(b) 7% of (a - 39 cfs) (see footnote 14)
(c) (b * 1.9835) * Number of days in Month (February =28.25 days due to leap year)
(d) (a - b)

In Acton's comment letter on the DEA dated October 21, 2003, they raised valid concerns with this alternative regarding flood flows or flood events. During a flood event, under this alternative 7 percent of the flood flow would be diverted to the Mill Ponds. The peak flow reported by the USGS stream gauge No. 01097000, for the period of record is about 4,200 cfs with an estimated water surface elevation of approximately 183 feet msl at Ben Smith Dam. This would result in a flow of 294 cfs to the Mill Ponds and exceed the Mill Pond's maximum pool elevation by approximately four feet. According to the Applicant's flow management study, the peak discharge, capacity of the two 24 inch pipes located within the lower Mill Pond (at a maximum pool of 179 feet msl) is 83 cfs. For this reason, additional project modifications may be required or taken into consideration ie: modifying the project's penstock to bypass flood flows, or the installation of an emergency spillway crest at the Mill Ponds.

c. Surrender with Sealed Canal and Manage Mill Ponds as Closed-Water System

Commentors recommended that we consider an alternative which would seal the canal and manage the Mill Ponds as a closed water system. If the canal were sealed, the Project would no longer have the capability to divert water to the Mill Ponds and all flow would remain in the Assabet River. The increased flows would likely have a small incremental benefit to the water quality in the bypass reach.

A consequence to the sealing of the diversion canal would be the loss of water for fire suppression needs. The Mill Ponds would no longer receive diverted water from the Assabet River. Because of this, WRMM may need to secure another water source[17] to maintain the water level in the Mill Ponds and the supplemental fire suppression capability currently provided by water diverted from the Assabet River. Staff estimates evaporation loss in the Mill Ponds for the months of June, July, and August, to be approximately 4.2 acre feet each month and 2.5 acre feet in September,[18] with an estimated total summer evaporation loss of 15.1 acre-feet. We note that this estimate only accounts for evaporative losses and is not an accurate representation of the total volume of water that would be needed to maintain the water levels in the Mill Ponds (i.e., this estimate does not consider losses due to seepage or leakage though Project structures and facilities, or gains from precipitation). Alternate water supply sources may include utilizing the town's domestic water supply, or installation of a well and pump, to pump groundwater into the ponds. This alternative would not result in a material adverse impact on the water quality of the project's discharge.

d. Surrender with no Environmental Measures

Under this alternative, the applicant would be able to manipulate all flows in the Assabet River within the project area, potentially dewatering the Ben Smith Reservoir, bypass reach and even the Assabet River downstream of the project. Therefore, with this alternative, the applicant would have full control of all of the Assabet River's flows within the project area and would not be responsible for maintaining any type of minimum flow requirements, having a direct affect on the water quality and quantity of

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[17] Supplemental water supply should be able to provide the ponds with up to 2,000 gpm, to meet the demand requirements of the fire sprinkler pumps within the Clock Tower Place Complex.

[18] Evaporation estimates were prepared using the calculated evaporation climatology maps prepared by the National Centers for Environmental Prediction of the National Weather Service. See http://www.cpc.ncep.noaa.gov/soilmst/eclim_frame.html (Retrieved May 6, 2002).

the Assabet River. Additionally, flow releases of less than the 7Q10 may significantly alter the water quality of the Assabet River below the Maynard wastewater treatment plant, where their maximum allowable discharge is determined by the 7Q10 flow.

Drawdowns of the project's reservoir could cause the dewatering of the bypass reach and erosion of the river's banks, resulting in a discharge of sediments to the stream. Sediments currently trapped behind the dam or along the rivers edge could be disturbed, released and discharged downstream, negatively impacting water quality. This could be significantly compounded if a drawdown were to take place concurrently with a rain event.

e. No Action

With this alternative, there would be no changes to the water quality or quantity than currently realized in the project vicinity. The 39 cfs minimum flow requirement would remain intact. Because no changes in operation or project features would occur, this alternative would have no effect on water quality or quantity.

3. Fishery Resources

a. Surrender with Dam Removal, Lowering, or Breaching

The fishery of the Assabet River, in the Project vicinity, would be classified as a resident warmwater fishery. Warmwater fish typically thrive in ponds, shallow lakes, reservoirs, and riverine backwater and slack-water areas and typically don't need to take on adfluvial migrations to fulfill their life cycles. Removal of the Ben Smith Dam would result in a loss of approximately 18 acres of warmwater fish habitat in the Assabet River and approximately 18 acres in the Mill Ponds. Alternatively, the removal of Ben Smith Dam would result in habitat more suitable for riverine species of fish (i.e. Blacknose dace, Fallfish, and creek chubsucker), a habitat type that is currently limited within the Assabet River, a river that is largely impounded with only short stretches of naturally flowing riverine reaches (See Figure 3). However, unobstructed tributaries to the Assabet river may provide the necessary habitat for these riverine species.

Dam removal would better facilitate the upstream migration of anadromous or catadromous fish species. However, there are no anadromous fish in the Assabet River, nor are there any anadromous fish restorations plans for the Assabet River. It is the MADFW's intention, as downstream barriers to upstream migration are removed,[19] to

[19] Currently there are two FERC projects (P-2998 and P-7148) and an unknown number of other non-hydroelectric dams, such as the Talbot Mills Dam, downstream of the Ben Smith Dam; which are impediments to upstream fish passage.

extend the ongoing clupeid restoration efforts in the Concord River, upstream into the Assabet River, and eventually above the Ben Smith Dam.[20]

The catadromous American eel reportedly exists within the Assabet River. The juvenile American eel migrate from the Atlantic Ocean to freshwater streams in North and South America where they stay until they reach sexual maturity and migrate back to the Atlantic Ocean to spawn.

However, American eel have the interesting ability to migrate around instream barriers. Richkus and Whalen (1999) have stated that American eels do have the ability to colonize upstream areas, even when barriers are present. Further, elvers have been documented climbing near vertical, wet surfaces while yellow eels have been known to migrate around barriers via terrestrial routes (Tesch 1977). American eel have demonstrated this behavior at the Essex Dam on the Merrimack River in Lawrence, Massachusetts.[21] In their comment letter dated October 6, 2003, the MADFW stated that less than 5% of the total number of eel at the base of the Essex dam is found above the dam. However, it is important to note that you cannot compare passage success rates between the Ben Smith Dam and the Essex Dam. Although both dams are of granite block construction, which likely improves the eel's ability to scale their vertical surfaces as compared to dams with smooth concrete faces, the Essex dam is approximately 3 times the height of the Ben Smith Dam. Further, and a potential reason for the low passage success at Essex Dam, the crest cap on the dam over hangs the vertical surface of the dam by about 2 inches. Eels attempting to scale the vertical surface of the Essex dam end up upside down as the attempt to navigate around the 2 inch lip of the crest cap, often resulting in their plummeting back to the base of the dam.[22] The Ben Smith dam does not have crest cap which protrudes beyond the face of the dam. These two factors combined, would indicated that passage success rate of American eel at the Ben Smith dam is likely greater then their passage success rate at the Essex Dam. For this reason, staff has determined that with the removal of the Ben Smith Dam, passage efficiency may be somewhat improved; however, it would result in only a slight enhancement to eel migration.

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[20] Telephone conversation with Dr. Caleb Slater of Massachusetts Division of Fisheries and Wildlife April 17, 2003.

[21] Telephone conversation with Doug Smithwood of the USFWS, Central New England Fishery Resource Office, May 6, 2003.

[22] Telephone conversation with Mr. Doug Smithwood of the USFWS, Central New England Fishery Resource Office, May 6, 2003.

b. Surrender with Modification of Canal Gatehouse

By modifying the canal gatehouse as proposed by the FWS and subsequently modified by staff, all flows up to 39 cfs would remain in the Assabet River. Only a small percentage (estimated to be less than seven percent) of the river flows above 39 cfs would be diverted into the Mill Ponds. The bypass reach and the downstream fishery would be gauranteed the protection a minimum flow of 39 cfs or inflow and no changes to the reservoir's elevation would occur. Therefore, alternative would not affect the warmwater fish habitat in the Ben Smith Reservoir and would continue to provide the level of protection for the downstream fishery that currently exists.

This alternative would involve some physical work at the gatehouse which may temporarily impact fishery resources. The physical work may result in the disturbance of sediments resulting in turbidity occurring near the gatehouse. For this reason, we would recommend that an erosion and sediment control plan be developed to lessen the land-disturbing activities and the disturbance of sediments associated with the modifications to the canal gatehouse, to protect fishery and aquatic resources.

c. Surrender with Sealed Canal and Manage Mill Ponds as Closed-Water System

By sealing the canal and managing the Mill Ponds as a closed water system all river flows would remain in the Assabet River. There would be no change to the Ben Smith Dam or Reservoir; therefore, this alternative would not affect the warmwater fish habitat in the Ben Smith Reservoir.

This alternative would involve some physical work in the canal which may temporarily impact fishery resources. This alternative may result in the disturbance of sediments resulting in turbidity occurring within the canal and potentially downstream into the Mill Ponds. For this reason, we would recommend that an erosion and sediment control plan be developed to lessen the land-disturbing activities and the disturbance of sediments associated with the modifications to the canal gatehouse, to protect fishery and aquatic resources.

d. Surrender with no Environmental Measures

Surrendering the Project without any PM&Es, could be devastating to the aquatic resources within the Ben Smith Reservoir and the Project’s bypass reach. Without any PM&Es, the applicant would have the ability to drawdown the reservoir and divert all of the Assabet River’s flow into the Mill Ponds at their own accord. This could result in the stranding and desiccation fish and other aquatic resources in the Ben Smith Reservoir and the Assabet River within the bypass reach on a daily or more frequent basis, dependant on the applicant’s management of flows through the project.

e. No Action

With this alternative, there would be no changes to the aquatic resources than currently realized in the project vicinity. The 39 cfs minimum flow would remain in the bypass reach, providing for the continued protection of aquatic resources. The Ben Smith Reservoir would remain intact, leaving the warm water fish habit intact. Because no changes in operation or project features would occur, this alternative would have no affect on the fishery resources of the Assabet River.

4. Terrestrial Resources

a. Surrender with Dam Removal, Lowering, or Breaching

Breaching, removing, or lowering the dam would likely result in impacts to resources both up and downstream of the dam. Above the dam, specifically within the Ben Smith Reservoir, the channel would likely narrow and otherwise inundated land would become available to both vegetation and wildlife. Vegetation would likely establish within the newly exposed soil and various species of wildlife would likely consume or use as cover the newly established vegetation. However, the Ben Smith Reservoir would decrease in size and loafing and nesting habitat currently available to waterfowl would become unavailable. Further, water currently diverted into the Mill Ponds would likely become unavailable and would be shunted downstream with little or no spillage into the Mill Ponds. With no water being diverted into the ponds, terrestrial and aquatic habitat currently provided by the Mill Ponds would likely decrease in quantity and quality. The Mill Ponds would likely become smaller and less desirable as conditions could become stagnant unless an artificial aeration and pumping system is installed to create some desirable conditions. Therefore, it is likely that the Mill Ponds, which provide habitat to numerous terrestrial species, will be adversely impacted by this alternative.

b. Surrender with Modification of Canal Gatehouse

Modification of the canal gatehouse, (including a fixed weir)as described by staff, would result in a bypass flow of 39 cfs, while also maintaining Ben Smith Reservoir and providing some flow into the Mill Ponds.

Protecting the consistent flow regime will likely protect habitat, food, and water resources provided by the aquatic habitats and utilized by terrestrial species dependent on those resources. Notwithstanding, construction of a fixed weir would require significant ground disturbance inducing erosion, sedimentation, and increased turbidity and some short-term effects are likely to occur and adversely impact downstream aquatic and terrestrial resources.

Sufficient flow into the Mill Ponds would provide protection of the terrestrial resources currently occurring within the Ponds including but not limited to waterfowl, vegetation, and other amphibians, reptiles, and mammals. In years of drought, there may not be sufficient flow into the ponds to protect and maintain the current habitat conditions. Insufficient flow would likely lead to stagnation and poor water quality which would adversely affect wildlife currently inhabiting the ponds. Additionally, indeterminable fluctuation of the pond levels could result in unstable pond conditions resulting in poorer water quality and decreases in habitat quality and quantity. Although it is likely that terrestrial resources would continue to be protected if the canal gatehouse were to be modified as described by this alternative, an artificial aeration and/or pumping system may need to be installed to maintain habitat and water quality and quantity in the mill ponds during drought years.

c. Surrender with Sealed Canal and Manage Mill Ponds as Closed Water System

Sealing the canal and managing the Mill Ponds as a closed-water system would result in no water being diverted into the Mill Ponds. Although the bypassed reach would likely result in some beneficial impacts to terrestrial resources due to sufficient flow downstream, it is unlikely that the Mill Ponds, managed as a closed-water system, would benefit. With no water being diverted into the ponds, habitat currently provided by the Mill Ponds would likely decrease in quantity and quality. The Mill Ponds would likely become smaller and less desirable as conditions may become stagnant. Therefore, it is likely that the Mill Ponds, which provide habitat to numerous terrestrial species, would be adversely impacted by sealing the canal and managing the Mill Ponds as a closed-water system. Under this alternative it may be necessary to install an artificial aeration and pumping system to protect the against undesirable conditions for terrestrial resources.

d. Surrender with no Environmental Measures

As described above in *Fishery Resources*, surrendering the project with no PM&Es, the applicant would have the ability to drawdown the reservoir and divert all of the Assabet River's flow into the Mill Ponds. This action could negatively affect numerous terrestrial species. Specifically loafing and nesting habitat may become periodically unavailable. Nesting waterfowl may be disturbed, and currently sheltered nest sites may become subject to predation during drawdown events. Waterfowl nests created while the reservoir is drawn down may become inundated when the reservoir is refilled. Egg sacks of terrestrial species that utilize water bodies for reproduction such as salamanders, toads, frogs or other amphibians, and juveniles, may become desiccated during drawdown events, potentially resulting in the loss of an entire year-class of species that utilize the Ben Smith Reservoir for spawning. Amphibious species tend to be

located near the bottom of the food chain. A single drawdown event could affect other species that utilize amphibians as a food source.

e. No Action

Under the no-action alternative, the Mill Pond Hydroelectric Project would continue under its current operation resulting in no change to the existing environment. None of the environmental measures proposed by the applicants or analyzed in this assessment would be implemented.

5. Land Use and Recreation

Land use in the project area would not be impacted by any of the alternatives because none of the alternatives infringe on or call for changes to the current uses of lands in and surrounding the project area.

a. Surrender with Dam Removal, Lowering, or Breaching

Recreational uses of the Assabet River or Project facilities would not be significantly impacted by dam lowering or breaching. The decrease in water level due to the lowering or breaching of the dam would reduce the amount of accessible boating and fishing on the reservoir, but would open up longer stretches of unrestricted waters for boating ease.

Dam removal would have both positive and negative affects on recreation in the Assabet River. With dam removal, the Assabet River would be returned to a riverine habitat and the permanent loss of the reservoir would change the recreational character of the project area. With this change, boat and canoe passage would no longer be hindered at the location of the dam, therefore increasing the length of unrestricted river stretches. However, the impoundment and the bypass reach are currently used for boating, fishing, and swimming, but the loss of the reservoir might render the project area less conducive to these activities. The loss of the impoundment, and therefore the loss of the warm water fishery associated with the project, would likely decrease recreational fishing along the reservoir and the loss of the reservoir would reduce the amount of flat-water boating available. Also, dam removal would render the boat access above the impoundment unusable due to the lowering in the water level. In contrast, draining and filling of the Mill Ponds would have a limited impact on recreation in the project since WRMM prevents all water related recreation activities (i.e. boating and fishing) from occurring in the Mill Pond.

b. Surrender with Modification of Canal Gates

Recreation would not be impacted by this alternative because no changes to the reservoir's elevation would occur. With this alternative, water would only be diverted from the Ben Smith Impoundment into the Mill Ponds during high inflow conditions (Ben Smith Impoundment level > 177.5 feet msl), leaving the level of the impoundment unchanged from current conditions. The water level in Mill Ponds might decrease during times of low flow, but since the Mill Ponds and canal do not currently offer any recreational uses, these resources would not be impacted.

c. Surrender with Sealed Canal and Manage Mill Ponds as Closed-Water System

Recreation on the Ben Smith Impoundment would not be impacted by this alternative because the elevation of the impoundment would remain the same or even increase since water will no longer be diverted from the impoundment into the Mill Ponds. Recreation on the Mill Ponds and the canal would not be impacted because the Mill Ponds and canal do not currently offer any recreational opportunities.

d. Surrender with no Environmental Measures

This alternative could impact the recreational uses of the project area due to the fact that there would be no regulations in place for the reservoir's management. The applicant's ability to drawdown the project's reservoir and reduce or eliminate flows released downstream into the project's bypass reach could negatively effect all water associated recreational activities occurring at the project. Although this alternative might affect the water levels of the Mill Ponds, because no recreation is allowed on the Mill Ponds, no adverse effects to recreational resources would occur at the Mill Ponds.

e. No Action

This alternative, which requires WRMM to restore generation to the project, will have no affect on the recreational uses of the Assabet River or the Mill Ponds. The 39 cfs minimum flow would continue to be provided, allowing for the continuance of canoeing and other forms of recreation within the bypass reach. Also, the Ben Smith Reservoir would remain intact providing ongoing boating and fishing opportunities.

6. Scenic and Aesthetic Resources

a. Surrender with Dam Removal, Lowering, or Breaching

This alternative would have short-term negative aesthetic effects from the demolition activities, such as increased suspended sediments and turbidity in the river

downstream of the dam and noise from the construction activities associated with the demolition or modification of the dam. Dam removal would also cause the loss of existing shoreline vegetation and the exposure of mud flats as previously inundated lands are exposed. The exposed dewatered shoreline areas could cause moderate, short-term negative visual effects until these areas revegetate, which would most likely occur quickly. Dam removal would permanently change the visual character of the project area with the return of a free-flowing river environment. This return to a free flowing river environment would reduce the eutrophication and resulting algal blooms and heavy plant growth found in the slow-moving sections of the Assabet River behind the dam.[23] The aesthetics of the project area would benefit from the reduced eutrophication because unsightly heavy plant and algal growth would diminish, as would the noxious odors associated with the die-offs of this vegetation. The approximately 2,200 feet of newly restored riverine setting previously inundated by the impoundment would be expected to resemble the stretches of river above the impoundment and below the dam in width, habitat, and visual aesthetics. Along with the return of riverine qualities, the vegetation and wildlife that inhabit the project area would be impacted by the loss of current shoreline vegetation and wildlife habitat, as well as the addition of new shoreline vegetation. Without the impoundment, the current conditions for waterfowl watching would decrease because of the lost habitat. However, the return of an unrestricted river setting would positively impact the aesthetics of the project area in the long run by creating a more natural environment.

Lowering or breeching the dam would cause the impoundment's water level and surface area to decrease. This would have an impact on the impoundment's scenic and aesthetic value to the residents adjacent the impoundment during the transition period before new vegetation took hold along the shoreline. However, since most of the shoreline would be expected to revegetate quickly, the aesthetics of the project area under this alternative would not be impacted significantly.

For the Mill Ponds, this alternative would decrease the water quality and quantity at the project area because dam removal or breaching would prevent the diversion of water from the Assabet River to the Mill Ponds. Due to the loss of current vegetation and wildlife, and the decrease in water quality and quantity, the non-flow dependent management of the Mill Ponds would have an adverse impact on the scenic and aesthetic resources of the ponds. Since the ponds would no longer be "flushed" with flows from the Assabet River, stagnation and the resulting odors would be more likely to occur. The draining and filling of the ponds would most likely cause increased odor as plants previously underwater became exposed and vegetation was allowed to build-up. Also, these newly exposed plants and the decaying remains would negatively impact the visual

[23] Organization for the Assabet River website; "OAR's Baseline Water Quality Monitoring Program: 1992-2001"; http://www.assabetriver.org/wq; (retrieved: 04/2003).

aesthetics of the ponds and the scenic views enjoyed from the surrounding trails and from Clock Tower Place.

b. Surrender with Modification of Canal Gates

This alternative would not significantly impact the scenic and aesthetic resources in the Ben Smith Impoundment. If any physical work is conducted at the gatehouse, vegetation, and therefore aesthetic resources, might be impacted for a short time as they are trampled and disturbed, but no long-term impacts are expected. Also, the noise from construction equipment during the modification of the canal gates would negatively affect the aesthetics while the modification occurred.

At times, this alternative may have an effect on the amount of water entering the Mill Ponds and on the water level in the Ponds, which could impact the scenic and aesthetic value to the tenants and visitors to Clock Tower Place and to landowners adjacent to the ponds. With decreased flow into the ponds, stagnation might occur, allowing vegetation to build up and decay without being flushed out and causing an unpleasant odor. However, with this alternative, water would be released into the Mill Ponds at the same frequency as water is currently released into the ponds, thereby minimizing stagnation and the development of an odor. The inclusion of a mechanical aeration device, such as a fountain, may improve the aesthetics of the Mill Ponds and would also help in preventing stagnation and odor during drought years.

c. Surrender with Sealed Canal and Manage Mill Ponds as Closed-Water System

This alternative would not affect the dam or the impoundment. Some short-term negative affects could impact the aesthetics as ground is disturbed during work on the canal, but no long-term impacts are expected. Since the Mill Ponds would be managed as a closed water system, the aesthetics might be negatively affected since the ponds could become stagnant leading to problematic plant and algal growth, nutrient loading, and odor. However, this could be alleviated with the incorporation of a mechanical device, such as a fountain, which would both look aesthetically pleasing and serve a functional purpose of aerating the ponds.

d. Surrender with no Environmental Measures

This alternative may cause major impacts to the aesthetics surrounding the Ben Smith Impoundment. This alternative provides the applicant the ability to manipulate all surface water elevations within the project's corresponding water bodies. As discussed above, the wildlife and botanical resources of the project area could experience many impacts since the water level in the reservoir could fluctuate drastically on a daily or seasonal cycle as compared to current levels. These impacts could affect the scenic and

aesthetic value to the residents and visitors to the Town of Maynard and tenants and visitors to the Clock Tower Place complex.

e. No Action

Under the no-action alternative, the scenic and aesthetic resources would experience no long-term adverse impacts. The noise, dust, and construction activities that would occur in order to bring the project up to generating status, since it has sat dormant for 10 years, might cause short-term impacts as well as some negative visual impacts to vegetation and surrounding landscape as generating flows are re-implemented. However, these impacts are only short-term and would not affect scenic and aesthetic resources in the long run. Also, noise from the power plant as it generates power might cause some negative aesthetic effects.

The Mill Ponds would experience little to no aesthetic impacts as well. Water would continue to be diverted into them at a regular frequency. This would help to flush out vegetation and prevent stagnation and odor; preserving the peaceful setting of the ponds. However, noise and debris from the running power generation plant might cause some negative auditory and visual affects.

7. Cultural Resources

If the Commission were to approve an order accepting a surrender of the exemption for this Project, this would effectively remove the Project from federal jurisdiction, which in turn, is considered an adverse effect under 36 CFR § 800.5(2)(vii) of the Advisory Council's on Historic Preservation (Council) implementing regulations of Section 106 (Section 106) of the National Historic Preservation Act (NHPA). In order to resolve this particular adverse effect to existing historic properties associated with the Mill Pond Hydroelectric Project, we would require WRMM to file for the Commission's approval a Historic Properties Management Plan (HPMP) that would include: 1) a contextual statement of significance involving the hydroelectric facilities associated with the Mill Pond Hydroelectric Project and its relationship with the Assabet Mill Area, 2) identification of all the individual Project facilities that are historic properties, and 3) a Historic American Building Survey and Historic American Engineering Record (HABS/HAER) for each of the identified Project historic properties.[24] The filing of a final HPMP would effectively ensure the long-term preservation of the significance behind all historic properties associated with the Mill Pond Hydroelectric Project.

[24] In formulating the HPMP, WRMM would use the "Advisory Council on Historic Preservation and Commission's Guidelines for the Development of Historic Properties Management Plans for FERC Hydroelectric Projects" (issued May 20, 2002).

We would execute a Memorandum of Agreement (MOA) with the Massachusetts State Historic Preservation Officer (SHPO) that would direct WRMM to consult with the SHPO, and file a final HPMP for Commission approval within 9 months of an order accepting a surrender of the exemption for this Project.[25] With the execution of the MOA, and subsequent filing of a final HPMP, we find that the proposed alternative would not have a significant impact to cultural resources.

a. Surrender with Dam Removal, Lowering, or Breaching

The Ben Smith Dam is a historic property associated with the Mill Pond Hydroelectric Project and the removal or alteration of it would constitute an adverse effect, pursuant to Section 106. Ground-disturbing activities associated with removal or lowering of the dam may also affect possible undisturbed buried historic archeological deposits, that may upon discovery, constitute historic properties. Sediments washing out from removal or lowering the dam, could also affect other possible undisturbed buried archeological deposits along the river banks downstream from the dam.

In order to resolve adverse effects to the dam, in addition to possibly disturbing buried archeological deposits, we would direct WRMM to file a final HPMP for the Commission's approval after an order accepting a surrender of exemption was issued. The elements of the HPMP would be the same, as previously outlined, under this alternative, in addition to; 1) an archeological survey in areas at and near where ground disturbing activities would occur as a result of lowering or removal of the Ben Smith Dam, and 2) a plan to avoid, minimize, or mitigate potential adverse effects to archeological deposits--if discovered and determined to be historic properties. The completion and filing of the final HPMP would essentially mitigate the adverse effects involving the removal or lowering of the Ben Smith Dam.

Under this alternative, we would also execute a MOA with the SHPO that would direct WRMM to consult with the SHPO and file a final HPMP for Commission approval.

b. Surrender with Modification of Canal Gatehouse

The Canal Gatehouse is also a historic property associated with the Mill Pond Hydroelectric Project, and modification to it would constitute a potential adverse effect. To resolve this potential adverse affect, we would require WRMM to file a HPMP–as discussed above for the proposed alternative--for the Commission's approval after an order accepting a surrender exemption was issued for this Project.

[25] The Advisory Council was invited to participate in the MOA, however they did not respond.

Under this alternative, we would also execute an MOA with the SHPO that would direct WRMM to consult with the SHPO and file a final HPMP for Commission approval.

c. Surrender with Sealed Canal and Manage Mill Ponds as Closed-Water System

This alternative would most likely not affect existing cultural resources in the Project area. Nevertheless, this alternative would still be part of a larger surrender of the exemption for this Project that would result in the execution of an MOA that would in turn direct WRMM in crafting, filing, and carrying out the provisions of an HPMP as discussed above. Depending on the extent of physical work which would be performed in association with this alternative, certain aspects of the HPMP may need to be modified, accordingly.

d. Surrender with no Environmental Measures

Historic properties have been identified within the Project's APE. As stated above, if the Commission were to approve an order accepting a surrender of the exemption for this Project, this would effectively remove the Project from federal control, which in turn, is considered an adverse effect under the Section 106 of the NHPA. In order to resolve such an adverse effect, the Commission would require that WRMM craft a HPMP that would in turn, produce a permanent record of any historic properties associated with the Mill Pond Hydroelectric Project. Making such a permanent record, would essentially mitigate the adverse effects to historic properties within the Project's APE. Under the alternative of surrendering the exemption with no PM&Es, an HPMP would not be done, and no permanent record would be produced for the Project. This would in effect, cause an unresolved adverse effect situation on historic properties that exist within the Project's APE. Under Section 106, this would be an unacceptable alternative, since there would be no resolution to adverse effect on historic properties identified within the Project's APE. Section 106 requires that adverse effects to historic properties must be resolved in some fashion either by avoiding, reducing, or mitigating such effects.

e. No Action

Under the no-action alternative, historic properties associated with the Mill Pond Hydroelectric Project would continue to be protected and remain under federal jurisdiction and oversight through the existing license exemption order. The existing day-to-day operations and maintenance procedures would not have an adverse effect to historic properties associated with the Project.

L. DEVELOPMENTAL ANALYSIS

As part of our analysis, Staff has prepared a preliminary cost estimate for implementing each of the alternatives considered above. We estimate the cost of Alternative a: *Surrender with no Environmental Measures* to be negligible. *Alternative* b: *Surrender with Dam Removal, Lowering, or Breaching* would likely range from $680,000 to lower or breach the dam, to $1.1 million for complete removal of the dam. For Alternative c: *Surrender with Modification of Canal Gatehouse*, we estimate it would cost WRMM approximately $19,000 to replace the existing gate structures and install a fixed weir in there place and survey the Ben Smith Dam. If WRMM needs to provide mechanical aeration to the Mill Ponds and secure a supplemental water supply to augment inflow to the Mill Ponds during dry periods, we estimate that the cost of implementing this alternative would increase to $115,000 (an additional $6,000 for aerations and $90,000 for well and pump). For the implementation of Alternative d: *Surrender with Sealed Canal and Manage Mill Ponds as Closed-Water System* we estimate the cost to be approximately $110,000. This would include the cost of constructing a dike across the power canal, securing an alternate water source for maintaining the Mill Ponds and providing mechanical aeration to the Mill Ponds for the protection of water quality. Additionally, the development and implementation of an HPMP would add approximately $10,000 to each of the alternatives listed above and an additional $20,000, for archeological investigations, if the dam were to be removed. To implement the no-action alternative (Alternative e), the project would need to be restored to operating status. Not knowing specifically what would need to be done to return the project to operating status;[26] we assume an expense of $50,000 to implement this alternative. As previously discussed, with the no-action alternative, the HPMP would not be necessary.

M. CONCLUSION

Staff analyzed five alternatives related to WRMM's application to surrender the project's exemption from licensing. Staff has determined that four of the alternative analyzed above, Alternatives a – c and e, would result in a "finding of no significant impact" and "would not be major federal actions significantly affecting the quality of the human environment"; and therefore, would not require the preparation of an Environmental Impact Statement (EIS). Staff only identified Alternative d., as resulting in a "finding of significant impact"; which would require the preparation of an EIS as part of the NEPA process, if selected by the Commission.

[26] The August 23, 2002, FERC operation report states the generating equipment has not operated since 1992, and the work required to make the project operational is not known.

Additionally, we recognize that each of the alternatives above may not adequately address the necessary details associated with the approval of the surrender (not alternative e); therefore we suggest that the Applicant develop a plan (except in the case of Alternatives d and e) to implement alternatives a – c and to do so in consultation with federal, state and local agencies. In the event the Commission selects Alternative e, we suggest that the Applicant file and implement a plan for Commission approval, detailing the necessary steps to be taken to restore the project to operating status.

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Appendix A

Flow Calculations and Formulas

0.5 feet of water flowing over the crest of Ben Smith Dam is equal to approximately 168.3 cfs.

Flow over Ben Smith was estimated using the broad crested weir equation:

Q = C L H**1.5

Q - flow in cubic feet per second (cfs) over the crest

C - discharge coefficient, estimated to be 2.8 for the Ben Smith Dam

L - crest length in feet, 170 feet for the Ben Smith Dam

H - depth of water on the crest in feet

Q = 2.8 * 170 * 0.5**1.5

Q = 168.3 cfs

A flow of 39 cfs over Ben Smith Dam would have a depth of approximately 0.2 feet over the dam's crest.

Using the broad crested weir equation solve for the depth of water that would cause 39 cfs to be released over Ben Smith Dam.

39 = 2.8 * 170 * H**1.5

H = 0.19 feet

Ben Smith Dam has a crest elevation of 177.0 feet. The reservoir water surface elevation that would produce a flow of 39 cfs over the Ben Smith Dam is estimated to be 177.19 feet.

Appendix B

Summary of Comments on the Mill Pond DEA
and
Our Response

The Massachusetts Division of Fisheries and Wildlife (MADWF) provided comments on the draft Environmental Assessment (DEA) by letter dated October 6, 2003. The following is our summary of their comments and our response:

A.1) **Comment:** The Ben Smith Dam (BSD) and associated Mill Ponds were constructed to provide power to the manufacturing facilities located in the adjacent mills. This service is no longer required; neither is the dam or associated project works. Therefore, the dam should be removed and the Mill Ponds drained.

Response: An analysis of the removal of the Ben Smith Dam and the associated project works including the Mill Ponds has been conducted in the DEA and this FEA.

A.2) **Comment:** The DEA is inaccurate in its description of the loss of a warmwater fishery if the BSD were removed. Rather the species composition of the impoundment will change from one dominated by "pond fish" to one dominated by "river fish". The MADFW further states that they believe that this change would be an environmental benefit since the Assabet River should be utilized by a community of river fishes rather than pond fishes.

Response: We agree that the removal of the BSD would result in a change in species composition from one of "pond fish" to one more suitable to a riverine habitat or "river fish". Therefore, removal of the BSD would have a negative effect on the fishery resources currently residing within the Ben Smith Reservoir but would result in an increase of additional habitat for "river fish". Section K.3.a of the FEA has been modified to incorporate this comment.

A.3) **Comment:** The MADFW states that our statement in the DEA that juvenile American eels can often navigate around instream barriers is completely unfounded. The MADFW states that it is true, a small percentage of elvers do appear to be successful at passing significant barriers; most do not. Additionally, barriers cause significant delays in the eel's migration; therefore, this is not a satisfactory situation.

The MADFW also calls into question staff's use of the Essex Dam on the Merrimack River as an example, stating that less than 5% of the total number of eel at the base of the dam are found above the dam.

Response: Although, we may not have fully defended our analysis regarding eel migration, we respectfully disagree with MADFW's statement that our analysis was unfounded and have provided further supporting information in the FEA (See Section K.3.a of this FEA).

To address the MADFW's comment regarding staff's use of the Essex dam as an example, staff was simply demonstrating that American eel do exhibit the behavior of scaling vertical or near vertical surfaces and utilizing terrestrial routes in the Merrimack River drainage as observed by USFWS personnel. We in no way were attempting to compare passage success rates between the Ben Smith Dam and the Essex Dam. Although both dams are of granite block construction, which likely improves the eel's ability to scale their vertical surfaces as compared to dams with smooth concrete faces, the Essex dam is approximately 3 times the height of the Ben Smith Dam. Further, and a potential reason for the low passage success at Essex Dam, the crest cap on the dam over hangs the vertical surface of the dam by about 2 inches. Eel attempting to scale the vertical surface of the Essex dam end up upside down as the attempt to navigate around the 2 inch lip of the crest cap, often resulting in their plummeting back to the base of the dam.[27] The Ben Smith dam does not have crest cap which protrudes beyond the face of the dam. These two factors combined, would indicated that passage success rate of American eel at the Ben Smith dam is likely greater then their passage success rate at the Essex Dam.

A.4) Comment: The MADFW states that staff's reliance on the fact that the Mill Ponds are needed for fire suppression is a "red herring" and that Commission staff's own preferred alternative (fixed weir) will require the applicant to seek supplemental fire protection above and beyond the Mill Ponds and therefore, breaching the dam and subsequent draining of the Mill Ponds would not be any different.

Response: We respectfully disagree with the MADWF comment. Staff's recommended alternative identified in the DEA that there may be a need to provide a source of water to supplement the Mill Ponds during dry periods to maintain the fire suppression capabilities by maintaining the necessary water level in the Mill Ponds. We identified that this supplemental source may be provided with the installation of a well and pump. We estimated that the installation of a well and pump with a capacity of approximately 800-gallon-per-minute (gpm) (1.78 cubic-feet-per-second) would cost $90,000. However, we do not believe that this pump would be operated on a regular basis, but rather only during dry years.

Table 5 of the DEA indicates that with the implantation of the staff recommended alternative, the mean monthly flow to the Mill Ponds in August (the mean driest

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[27] Telephone conversation with Mr. Doug Smithwood of the USFWS, Central New England Fishery Resource Office, May 6, 2003.

month on record) would be about 1.6 cfs (718 gpm) or 3.2-acre-feet per day, which is equivalent to about 99-acre-feet per month. Considering that staff has estimated the evaporative loss from the Mill Ponds to be 4.2 acre feet in August, the ponds would have a net benefit of approximately 94.8-acre-feet during that month. Based on these calculations, we believe that during normal years, no additional water supplementation would be necessary.

MADFW states that breaching the Ben Smith Dam would have the same or similar results on the need for supplemental fire suppression as staff's recommended alternative. Again, we respectfully disagree. With the removal or breaching of the Ben Smith Dam, no water would be diverted from the Assabet River into the Mill Ponds. This would result in the ponds needing to be supplemented year round in order to maintain their fire suppression capabilities.

We estimate the cost of operating the well and pump (as described above) to be $24,000 annually. Whereas the operational cost for staff's alternative (identified in the DEA) may be as much as $8,000, (assuming that it was necessary to operate the well and pump everyday between June and September). Additionally, we estimate that this operation would only occur during dry years.

Additionally, if the Mill Ponds were to be drained as indicated in the MADFW's comment, the supplemental water supply would likely need to be designed to meet the potential 2,000 gpm demand of the existing sprinkler system pumps. Although, this alternative would not result in an annual operational expense, it would result in a greater initial expense with the installation of multiple wells and pumps. We estimate the cost to be $250,000.

The Organization for the Assabet River (OAR) provided comments on the DEA by letter dated October 27, 2003. The following is our summary of their comments and our response:

B.1 **Comment:** The OAR states that our analysis in the DEA assumes that the applicant complies with the 39-cfs minimum flow requirement. The OAR also states that this is not the case given that their staff has observed substantial leakage through the project's gates in the canal gatehouse even when the gates are fully closed; consequently allowing the diversion of water from to the Ben Smith Reservoir into the Mill Ponds even when inflow is less than the required minimum flow of 39-cfs.

Response: The no-action alternative reflects the current operating conditions as approved by the Commission in the Project's exemption from licensing. These conditions are the conditions that the Project would continue to be responsible for if the Commission were to deny the surrender application. Any deviation from the

required operating regime should be reported to the Commission to initiate a compliance investigation. If the Commission were to find that a deviation from the required operating regime had occurred or continued to occur, actions would likely be taken to correct the non-compliant activity. Thereby, restoring the Project's operations to those as approved by the Project's exemption from licensing (defined as the existing environment).

B.2 **Comment:** The OAR comments that the DEA fails to recognize the increase and improvement in habitat for fish species that require flowing water for part of their life cycle, if the Ben Smith Dam were to be removed or breeched.

Response: We agree with the OAR, the DEA does not specifically identify the habitat improvements or benefits of dam removal, lowering or breeching on flow dependant fish species. Section K.3.a, of the FEA has been modified to address this issue.

B.3 **Comment:** The OAR made the statement that Rainbow trout and Tiger Muskie only occur when stocked and that the Mummichog is not present in the Assabet River or its tributaries.

Response: Thank you for your comment. The Mummichog has been removed from Table 4 in the FEA.

B.4 **Comment:** The OAR provided and requested that, additional water quality data be included in Table 3.

Response: Thank you for your comment. Table 3 of the FEA has been modified to include the provided data.

The U.S. Fish and Wildlife Service (USFWS) provided comments on the DEA by letter dated October 27, 2003. The following is our summary of their comments and our response:

C.1) **Comment:** The USFWS requested that we analyze an additional alternative, an alternative that would remove, lower or breach the Ben Smith Dam, seal the canal and manage the Mill Ponds as a closed water system.

Response: For the reasons discussed in our response to comment A.4, we do not believe that an analysis of the requested alternative is necessary.

C.2) **Comment:** The USFWS states that the actual length of the Ben Smith Dam is unknown and requests that the length be verified by staff and defined in the FEA.

Response: Thank you for your comment. We have addressed this issue in Sections K.2.b the FEA.

C.3 **Comment:** The USFWS notes that Section J.2.d of the DEA indicates that the bypass reach only ever receives up to 39-cfs during all flow conditions and that this is not the case.

Response: Section K.2.d of the FEA has been modified.

C.4 **Comment:** The USFWS states that staff did not appropriately address the benefits of dam removal would have on resident fluvial fish species. Because these species are currently habitat limited within the Assabet River system, dam removal would have significant benefits.

Response: Although dam removal would likely benefit fluvial fish species, removal of the Ben Smith dam would negatively affect the existing warm water fishery, currently existing within the Ben Smith Reservoir. We have modified Section K.3.a of the FEA to address this comment.

C.5 **Comment:** The USFWS states that they disagree with our analysis regarding the passage of juvenile American eel around the Ben Smith Dam.

Response: Please see our response to comment A.3.

C.6 **Comment:** USFWS states that the Ben Smith Dam is located high in the Merrimack River watershed and that because of this; many of the eels attempting to ascend the dam would be the older yellow stage eel which have more difficulty ascending the dams.

Response: The USFWS is correct; the younger glass eel can ascend the surface of a dam more easily than the older yellow eel. However, it is at the yellow eel life stage when eels will migrate around a barrier via terrestrial routes (Tesch 1977). Additionally, we respectfully disagree with the USFWS characterization of the Ben Smith Dam being located high within the Merrimack River watershed. We would characterize the Ben Smith Dam as being relatively low in the watershed. The Ben Smith Dam is located approximately 50-miles upstream from the Merrimack River s estuary and has an elevation of approximately 177 feet above sea level. In contrast, the headwaters of the Merrimack River begin in the White Mountains of New Hampshire. The Pemigewasset River a tributary to the Merrimack River, begins at Profile Lake in Franconia Notch. Profile lake has an elevation of approximately 1,950 feet above sea level, and is about 170-miles upstream of the Merrimack River s estuary.

C.7) Comment: USFWS states that they believe upstream eel passage efficiency would be improved if the Ben Smith Dam were removed or if one or more eel ladders were installed at the dam if it were to remain in place.

Response: We agree, eel passage efficiency would be improved if the Ben Smith Dam were removed or if eel ladders were installed; however, for reasons stated above in our response to comments A.3 and C.7 and within the FEA, it would result in only a slight enhancement to eel migration.

C.8) Comment: The USFWS recommended changing the language in Section J.4.b to state "…unless an artificial aeration and pumping system is installed to maintain habitat and water quality in the mill ponds."

Response: Thank you for your comment. We have modified the FEA to incorporate this recommendation.

C.9) Comment: The USFWS recommended that staff also note the aesthetic benefit of reduced algal blooms in the river (and the associated noxious odors after the algal die-offs) if the dam were removed. They also requested that staff modify the Dam Removal alternative to include operating the Mill Ponds as a closed-water system.

Response: Thank you for your comment. The response regarding algal blooms has been noted in Section K.6.a of the FEA. In regards to the modification of the alternative, for the reasons discussed in our response to comment A.4, and mentioned again in comment C.1, we do not believe that an analysis of the requested alternative is necessary.

C.10) Comment: The USFWS states the second sentence of section K. Recommended Alternative in the DEA should be corrected to state 0.2 feet not 0.2 inches .

Response: Thank you for your comment, the FEA includes this correction.

C.11) Comment: The USFWS states that it does not believe it is necessary for the applicant to evaluate the need to secure a supplemental water supply or provide mechanical aeration to the mill ponds if the project were to be surrendered as recommended by staff in the DEA.

Response: We respectfully disagree. If the Commission were to approve the project s surrendered as recommended by staff in the DEA, the water resources and the fire protection capabilities of the Mill Ponds may be negatively affected by that action. Therefore, it is necessary for the applicant to determine if a supplemental water supply or mechanical aeration would be necessary to maintain the current fire suppression capability and the water quality in the mill ponds.

Acton Hydro provided comments on the DEA by letter dated October 21, 2003. The following is our summary of their comments and our response:

D.1) **Comment:** On page 13 of the DEA, last sentence of the second paragraph, Acton recommends that the wording be changed to state that Operation of the Project would not be economically beneficial to WRMM. Acton recommends this change because only WRMM has conducted an economic analysis of operating the project and believes that just because WRMM did not find the operating the project would be to their financial benefit, does not mean that others who are in the hydroelectric industry may.

Response: The FEA has been modified to incorporate WRMM s comments as to why they desire a surrender of the Project's exemption, as stated during the meeting on the DEA held in Maynard, Massachusetts on October 29, 2003. The modification can be found in Section B. *Purpose and Need for Action*.

D.2) **Comment:** Acton provided the following corrections to the DEA:

- Page 40, Modify Canal Gatehouse the modified weir elevation is 177.2 not 177.5.
- Page 45, First paragraph, second sentence should be (0.2 feet higher) not inches.
- Page 45, Third paragraph, first sentence the word "affect" should be replaced with "effect".

Response: Thank you for your comment. Each of the corrections above have been incorporated in the FEA.

D.4) **Comment:** Acton requests that an economic analysis be performed that compares the costs of surrendering the project to the cost of returning the project to operation.

Response: In Section K. Recommended Alternative, for the DEA, we did provide our estimated cost for each of the alternatives analyzed, including the no-action alternative which would require the project to be returned to operating status. This analysis can now be found in Section L. Developmental Analysis, of the FEA

D.5) **Comment:** Acton argues that all local, renewable, sustainable, and economic power generation is significant.

Response: We agree. The Need for Power section has been modified.

D.6) **Comment:** It is improper to suggest that replacement power can be economically evaluated against incremental power purchased at the margin of the open market. It would be more correctly compared to the costs of avoided by not having to install more baseload capacity to replace its loss.

Response: We agree; the lost generating capacity from decommissioning would be valued at the replacement cost. The Need for Power has been revised.

D.7) **Comment:** Acton comments that certain aspects of staff s recommended alterative (fixed weir) as identified in the DEA does not address certain issues i.e. flood flows and surface vegetation accumulation.

Response: Thank you for your comment. The FEA now identifies that there are special case scenarios, and conditions that may need to be taken into consideration during the development of a Plan for the implementation of the Commission's required action if the surrender application is approved.

D.8) **Comment:** Acton raises concerns that the DEA does not adequately address the potential sediment transfer and re-deposition if the Ben Smith dam were to be removed or breeched.

Response: Thank you for your comment. The FEA addresses this issue in Section K.2.a.

D.9) **Comment:** Acton states that the DEA mentions fixing the main intake s wooden slide gate in the closed position in staff s recommended alternative as identified in the DEA and that it allows operation of that gate for maintenance operations or for emergency situations. Acton contends that the FEA should specifically define what an emergency situation is or maintenance operations are acceptable to ensure compliance with the recommendation.

Response: In the event of the Commission s approval of the surrender application, we are unable to define what circumstances operation of the main wooden gate would be allowed. Such definition should be provided by the regulatory authority that will assume jurisdiction over the project, or in this case, the Massachusetts Department of Environmental Protection.

D.10) **Comment:** In Acton s review of staffs environmental analysis within the DEA, they state that it appears that the No-Action alternative yields that a return to project operation provides the least impact at the least cost with the most benefit as compared to the other alternatives considered.

Response: Staff agrees that the implementation of the No-Action alternative would result in the least environmental impact as compared to the other alternatives considered. However, we are unable to support Acton s claim that the No-Action alternative would be the least costly alternative. Staff estimated that returning the project to operational status would cost $50,000. However, because we do not know specifically what would need to be done to restore the project to operating status, the actual cost may vary widely from our estimate.

The Massachusetts Department of Environmental Protections provided comments on the DEA by letter dated October 31, 2003. The following is our summary of their comments and our response:

E.1) **Comment:** The MADEP supports the USFWS s request that staff consider an additional alternative in the FEA which will examine removal, lowering, or breaching of the Ben Smith Dam in conjunction and managing the Mill Ponds as a closed water system.

Response: Thank you for your comment. Please see our response to comment number C.1.

E.2) **Comment:** If the Commission were to issue an order approving the surrender application the MADEP requests that the FEA clarify the Commission s jurisdiction following that issuance.

Response: Thank you for your comment. Please see our response to comment number B.2.

E.3) **Comment:** MADEP requests that if the Commission were to approve the surrender application with conditions which may require the development of a plan for implementation of various conditions, that the following state and federal agencies be included in the list of agencies to be consulted with: The US Army Corp of Engineers (ACE), and the Federal Emergency Management Agency (FEMA), MADFW, and the Department of Conservation and Recreation s Office of Dam Safety.

Response: In the event that the Commission approves the surrender application and that approval requires the development of a plan, staff will recommend to the Commission that the agencies listed above be consulted with by the applicant during the development of that plan.

The U.S. Environmental Protection Agency (EPA) provided comments on the DEA by letter dated October 29, 2003. The following is our summary of their comments and our response:

G.1) **Comment:** EPA states that a more complete analysis of fishery impacts/benefits associated with dam removal should be conducted in the FEA.

Response: Thank you for your comment. Please see our response comment number C.5.

G.2) **Comment:** EPA recommends that a more complete analysis of an alternative which would manage the Mill Ponds as a closed system be evaluated in the FEA. They state that this analysis should identify alternatives for fire suppression, as well as maintaining small mill ponds with aeration systems.

Response: Thank you for your comment. Please see our response to comment number C.1.

The Town of Maynard, Conservation Commission (MCC) provided comments on the DEA by letter dated October 29, 2003. The following is our summary of their comments and our response:

G.3) **Comment:** The MCC believes that the crest of the fixed weir should be adjustable to allow for fine tuning of the diversion of flow into the Mill Ponds if field testing indicates that minor adjustments are necessary to ensure the 39 cfs minimum flow to the bypass reach.

Response: We respectfully disagree with MCC's recommendation that the fixed weir be made adjustable. Our analysis in the DEA indicates that the crest elevation of the fixed weir should be fixed to prevent future manipulations of all associated water levels and flows. We believe that the necessary crest elevation of the fixed weir can be determined through mathematical calculations. However, if the Commission were to approve the surrender application and conditioned the surrender on the installation of a fixed weir, as identified by staff in the DEA, the accuracy of the calculations needed to determine the crest elevation of the fixed weir will depend on a detailed survey of the Ben Smith Dam. The survey should define the elevation and width of the dam, and determine if the dam s crest is level or pitched across its length. Additionally, leakage through the dam should be taken into consideration and calculated. The calculations to determine the necessary crest elevation should take into account each of these factors to ensure accuracy and the protection of the minimum bypass flow. Once the fixed weir is

installed, the appropriate measurements should be made to ensure that the necessary flow is being provided to the bypass reach at all times. If these measurements should indicated that a flow less than 39 cfs is being provided to the bypass reach and simultaneously a flow exists over the crest of the fixed weir, the weir should then be modified to address this issue. Any modifications should be permanent in nature and should not be adjustable.

G.4) Comment: The MCC recommends that the fixed weir be installed at the head of the canal to help prevent stagnation of the canal during low flows.

Response: In the fixed weir alternative, the USFWS proposed and staff supported the construction of the fixed weir within the existing gatehouse. As discussed in the DEA and this FEA, construction of the fixed weir at this location would likely reduce ground disturbing activities that would be associated with these construction activities. However, in the event that the Commission approved the surrender application and required the construction of a fixed weir within the, it is likely that the Commission would require the development of a detailed plan for the implementation of their requirements. That plan would typically be developed in consultation with local, federal and state agencies. If for various reasons it is deemed appropriate to locate the fixed weir in a position other than the existing gatehouse, or make other similar modifications to the Commission's decision, the plan should provide specific details, such as the location of the fixed weir, or the modifications and the reasoning for the modification. Additionally, the Plan should address any measures to be taken to adequately the various resource areas that may be affected as a result of the plan's implementation.

G.5) Comment: The MCC feels that there is merit to providing a system in which the fixed weir could be breached (i.e. a valve) in the event of an emergency and states that this should only be allow if there is an approved plan which clearly defines an "emergency" and the protocol for and authorities involved in addressing said emergency.

Response: We see the value in being able to provide an assured flow of water to the Mill Ponds in the event of an emergency (i.e. a fire in the Clock Tower Place mill complex). However, the Commission cannot enforce any future conditions or requirements (such as a plan that would clearly define an emergency) after the surrender is complete, because, after the surrender, the Commission will not have any jurisdiction or authority to enforce such conditions.

G.6) Comment: MCC states that the Applicant should be allowed to address certain issues/concerns resulting from the Commission's approval of the surrender application i.e. low dissolved Oxygen levels within the Mill Ponds and duckweed control.

Response: Thank you for your comment. Please see our response to comment G.7.

G.7) Comment: The MCC states that it is clear that with the implementation of staff's recommended alternative as identified in the DEA that the applicant will need to secure a supplemental source of water to maintain the Mill Ponds at their current level. The MCC further states that the Applicant should be required to secure the supplemental water supply before the Commission approves the surrender.

Response: In the DEA staff identified the potential need to supplement the Mill Pond's water supply during dry years and suggested one possible way to do this was with the installation of a well and pump. However, other alternatives may be available or preferred and could be identified in any plan that may be required by the Commission for the implementation of the Commission requirements if necessary. Additionally, a plan may identify other issues or concern and means for their resolution as deemed appropriate by the exemptee.

G.8) Comment: The MCC states that if WRMM wants to allow the Mill Ponds to readjust to a smaller size they should be required to provide detailed information as to how this could be done in conformance with environmental protection laws, and provide plans for alternative fire protection resources, and management of the new land above water level.

Response: Although we agree with the MCC on this issue, we note that WRMM or the Commission has not proposed to reduce the size of the Mill Ponds; therefore, we consider this issue to be moot.

Literature Cited in Appendix B

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Appendix C

Figures 1 & 2

Project Map and Facility Location

Figure 1. Mill Pond Project Location Map and Layout

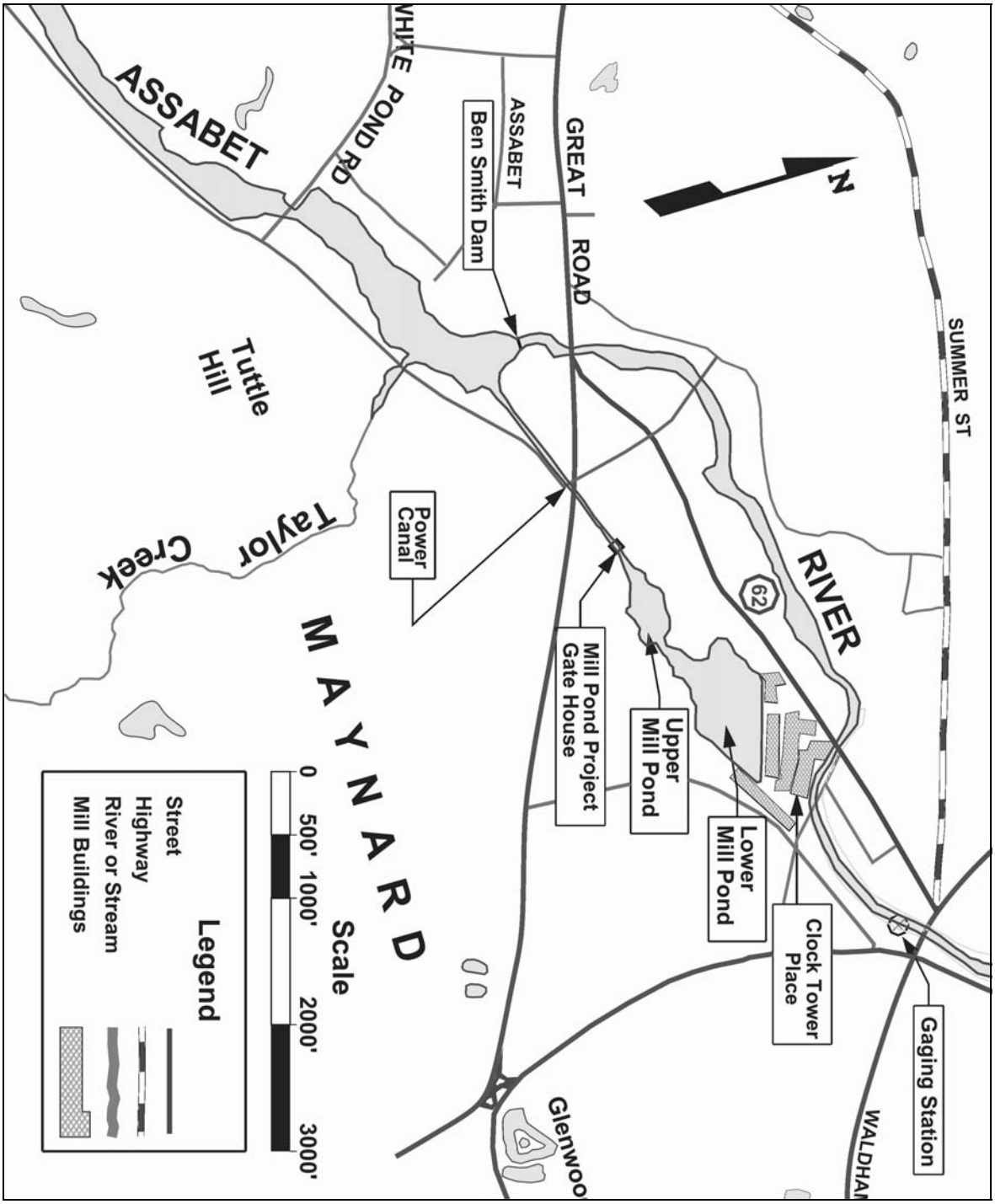

Figure 2. Mill Pond Project Facility Locations