

Water Quality Certificate
(P.L. 92-500, Section 401)

In the matter of: Tunbridge Mill Corporation
PO Box 2, Spring Road
Tunbridge, VT 05077

APPLICATION FOR TUNBRIDGE
MILL RESTORATION PROJECT.

The Water Quality Division of the Vermont Department of Environmental Conservation (the Department) has reviewed a Water Quality Certification application dated September 27, 1990 and filed by Mr. Jay Boeri, acting on behalf of the Tunbridge Mill Corporation (the applicant). This application has been supplemented by a final copy of the Federal Energy Regulatory Commission (FERC) license application filed with the FERC on February 15, 1991. The Department has made the following findings:

1. The applicant proposes to redevelop an existing concrete dam, replacing one of the two Francis turbine units located in the historic Hayward-Noble Saw and Grist Mill with a new Kaplan unit capable of producing a 100 kw at a gross head of 17.2 feet. The dam is located in the village of Tunbridge on the First Branch of the White River. The existing penstock would be replaced with a new 4.5 foot diameter steel penstock, partially buried in the existing headrace channel.
2. The dam would be fitted with two feet of flashboards, only slightly enlarging the small impoundment, which the applicant has projected will have a surface area of about 2.5 acres and a gross storage capacity of about six acre-feet. The project hydraulic capacity would be in the range of 15 to 115 cfs.
3. The dam is located approximately 5.6 miles upstream of the confluence with the mainstem of the White River. The drainage area at the dam is 78 square miles. Gaging stations have been operated by U.S. Geological Survey at two locations on the main stem of the White River, near Bethel and at West Hartford. A gaging station has also been operated at Ayers Brook, a tributary of the Third branch, since 1940. Ayers Brook, having a drainage area closer to the order of the site, can be used for estimating hydrologic statistics using a direct drainage proration of 78 square miles to 30.5 square miles for the USGS gage.

Parameter	Value
Mean runoff	122 cfs (21.19 in/yr)
7Q10	5 cfs
95% Exceedance	11 cfs
50% Exceedance	64 cfs
10% Exceedance	276 cfs

4. The First Branch in the project reach is designated as Class B under the Vermont Water Quality Standards and as cold water fisheries habitat. As such, the river is managed for good aesthetic value, high quality habitat for aquatic biota and wildlife, and to serve uses including swimming and recreation. The dissolved oxygen standards for cold water streams is 6 mg/l or 70 percent saturation unless higher concentrations are imposed for areas that serve as salmonid spawning or nursery areas important to the establishment or maintenance of the fishery resource.
5. The project as described in the application will operate in an instantaneous run-of-the-river mode. The flow regime below the project will, therefore, generally continue to be natural, except in special circumstances, such as maintenance operations. During such circumstances where water must be put into storage, the maintenance of a minimum flow of 39 cfs, equivalent to the summer aquatic base flow from the US Fish and Wildlife Service Flow Recommendation Policy for the New England Area, should be released.
6. The applicant has proposed to release a minimum flow of 15 cfs into the bypass to support fisheries habitat and other bypass values, including aesthetics. During periods of the operation of downstream fish passage facilities, the applicant proposes to release 21 cfs into the bypass--16 cfs to operate the passage facility and 5 cfs over the dam crest. The flow of 21 cfs is the applicant's estimation of the summer aquatic base flow, based on the Ayers Brook gaging station.
7. During July and August 1991, the applicant arranged for flow demonstrations with the Vermont Department of Fish and Wildlife in order to individually assess the need for minimum flows in the

bypass for fisheries habitat. The results of this flow demonstration study have not been concluded. Pending the completion of this study, the Department of Fish and Wildlife has recommended a condition on the project that a bypass minimum stream flow of 39 cfs be released.

8. As part of the program to restore Atlantic salmon to the Connecticut River and its tributaries, the Agency expects the river upstream of the project to contribute to natal production of salmon so that adults must have access to this reach. Stocked salmon already occur upstream of the project. Therefore, facilities to provide passage for upstream migrating salmon and to prevent entrainment and mortality of out-migrating salmon juveniles and kelts and resident salmonids will be required as part of this water quality certification in order to insure that fisheries management objectives for the river can be met.
9. Downstream fish passage facilities, to include racks, screens or other devices adequate to prevent turbine entrainment and rack impingement and a means of conveying fish safely past the dam, must be operated seasonally.
10. The project's inability to operate at flows less than 30 cfs will assure that dam reaeration is available during critical low-flow periods of the summer and early fall. The First Branch has a generally high quality of water, and the project is not expected to significantly reduce this quality.
11. The Department finds that the river in the project vicinity is popular for several recreational uses, including fishing, swimming, sunbathing and viewing. Continued accessibility to the public is desirable. The mill preservation project should enhance the public awareness of the river resource and its role in the development of Tunbridge.

No portage need be provided at this time due to the existence of a second impassable dam a short distance upstream of this site.

ACTION OF THE DEPARTMENT

Based on its review and findings, the Department finds that there is reasonable assurance that construction and operation in accordance with the following conditions will not cause a violation of Vermont Water Quality Standards:

- A. The facility shall be operated in a strict run-of-the-river mode where instantaneous flows below the tailrace shall equal instantaneous inflow to the impoundment at all times. The impoundment may not be drawn down without prior approval by the Department. When the facility is not operating, all flows shall be spilled at the dam.
- B. When available from inflow, a minimum instantaneous flow of 39 cfs shall be maintained in the penstock-bypassed section of stream at all times. If the instantaneous inflow falls below this minimum, all flows shall be spilled at the dam. Before the start of construction the applicant shall furnish a description, hydraulic design calculations, and plans for the measure to be used to pass this minimum flow.
- C. The applicant shall file for review and approval, prior to the start of construction, a plan for monitoring instantaneous flow releases at the project. Following approval of the monitoring plan and commencement of project operation, the applicant shall then measure instantaneous flows and provide records of discharges at the project on a regular basis as per specifications of the Department. Upon receiving a written request from the applicant, the Department may waive the requirement for flow monitoring at this project provided the applicant satisfactorily demonstrates that the required flow will be discharged at all times.
- D. The applicant shall file for review and written approval, prior to the start of construction, a comprehensive erosion control and water management plan to cover construction activities. This plan shall address the maintenance of stream flow during construction and measure taken to prevent the discharge of sediment, wet concrete, and debris into State waters to limit adverse impacts on water quality, aquatic habitat and biota. It may be beneficial to consult with the Department during the development of this plan.
- E. The applicant shall submit a plan for downstream fish passage to the Department of Fish and Wildlife (Fish and Wildlife) for review and

written approval prior to project construction. Downstream passage shall be provided April 1 - June 15 and September 15 - November 15 shall be functional with and without flashboards in place. This plan shall include provisions to:

1. minimize passage of fish into the generating unit(s) if injury or morality can result
2. minimize impingement of fish on devices or structures used to accomplish #1
3. and convey fish safely and effectively downstream of the facility.

The project shall not be operated without the approved passage plan in place. The applicant shall file a copy of the approval letter and any appropriate plans with the Department within two weeks of Fish and Wildlife's action.

- F. The applicant shall construct and have operational, upstream passage facilities for adult Atlantic salmon, within one year of:
1. Notification by the Agency that fifty (50) adult salmon have passed the Bellows Falls passage facility for two consecutive years, or
 2. A request from the Agency to install upstream passage facilities, based on:
 - a. verified observations of adult salmon present in the Tunbridge project vicinity (within the reach of river between the Tunbridge dam and the next downstream dam on the First Branch), and
 - b. twenty-five (25) adult salmon having passed the Bellows Falls facility for two consecutive years.

Development of a design and program for upstream passage of salmon and for sufficient flow releases to accommodate program needs shall be done in cooperation with the U.S. Fish and Wildlife Service and Vermont Fish and Wildlife Department.

- G. The applicant shall insure that every reasonable precaution is taken

during construction to prevent the discharge of petro chemicals, wet concrete and debris to State waters.

- H. Debris associated with project construction and operation, including trashrack debris, shall be disposed of properly.
- I. Any desilting of the dam impoundment shall be done in accordance with the Agency of Environmental Conservation's Desilting Policy, a copy of which is attached. The Department shall be contacted prior to any desilting activity.
- J. Any significant changes to the project, including project operation, must be submitted to the Department for prior review and written approval.
- K. The applicant shall provide the Department with an as-built set of plans and a copy of the turbine rating curves for the record within one year of the completion of construction.
- L. No construction may commence until after the Department has issued written approval under Conditions B,C,D, and J and until Fish and Wildlife has issued written approval under Condition E. Operation changes made after project completion are subject to Condition I and must be approved prior to effecting the change.
- M. The applicant shall notify the Department when project construction has been completed and the project is in operation to arrange for an Agency site visit. This shall be done in writing within two weeks of the commencement of project operation.
- N. The applicant shall allow public access to the project area for utilization of public resources, subject to reasonable safety and liability limitations. Such access should be prominently and permanently posted so that it's availability is made known to the public.
- O. The applicant shall allow the Department to inspect the project area at any time to monitor compliance with Certification conditions.
- P. The Department is reserving the right to add and alter terms and conditions as appropriate to carry out its responsibilities during the life of the project with respect to water quality.

Q. The applicant shall incorporate the conditions of this certification in any conveyance--by lease, sale or otherwise--of its interests so as to legally assure compliance with said conditions for as long as the project operates.

/s/ William C. Brierly for
Reginald A. LaRosa
Acting Commissioner
Department of Environmental
Conservation

Dated at Waterbury, Vermont this 25th day
of September, 1991.

RAL:JRC;jl

Attachment: Desilting Policy

CC: Distribution List