

WATER QUALITY CERTIFICATION

(P.L. 92-500, Section 401)

In the matter of: Mr. John L. "Jay" Boeri  
R.R.2  
Woodstock, VT 05091  
Application for Martinsville  
Hydroelectric Project

The Water Quality Division of the Vermont Department of Water Resources and Environmental Engineering (the Department) has reviewed a Water Quality Certificate application dated August 29, 1983 and filed by Mr. John L. "Jay" Boeri (the applicant). The Department has made the following findings:

1. The applicant proposes to develop a hydroelectric facility on Lulls Brook at Hartland about 1.2 miles upstream of its confluence with the Connecticut River and about 0.8 mile upstream of an existing dam. Electricity produced from this facility would be sold to a local utility.
2. A concrete dam would be constructed at the former site of a timber crib dam approximately 250 feet downstream of the U.S. Route 5 bridge. The dam would be constructed to a height of 15 feet (543.5' NGVD) with an additional four feet of flashboards. The normal pool elevation with flashboards in place would be 547.5' NGVD, creating an impoundment with a surface area of 1/4 acre and a storage capacity of 2.5 acre-feet. A 440 foot section of stream would be bypassed by a three foot diameter penstock. A powerhouse would be constructed and contain two generating units having an installed capacity of 275 kw at an operating head of about 95 feet. The hydraulic

operating range of one of these turbines would be 2 to 17 cfs, and the other would be 17-53 cfs. An access road from Route 5 to the powerhouse would be constructed. A substation and 3000 feet of interconnecting transmission line would be installed.

3. The applicant proposes to operate the facility in a strict run-of-the-river mode where instantaneous outflow at the tailrace equals instantaneous inflow to the impoundment at all times.

4. The applicant proposes to maintain a minimum flow of 2.0 cfs in the penstock-bypassed section of stream.

5. The drainage area of Lulls Brook at the project site is 21 square miles. A U.S.G.S. gaging station (#01155200) was in operation on Sacketts Brook near Putney from 1963-1974. Records for this gaging station have been prorated based on drainage areas to estimate the following hydrologic values for the dam site:

<u>Parameter</u>	<u>Value (cfs)</u>
Mean Flow	32 (21.59 in./yr.)
7Q10	2.0*
95% Exceedance	3
50% Exceedance (Median)	17
10% Exceedance	76

\*Value determined by using both the Sacketts Brook gage and a predictive model for estimating 7Q10 at ungaged watersheds in Vermont.

6. Lulls Brook at the project site is rated Class B by the State of Vermont Water Resources Board. Class B waters are suitable for swimming, recreation, irrigation and agricultural uses; good fish habitat; good aesthetic value; and are acceptable for public water supply with filtration and disinfection.

Lulls Brook is designated Water Management Type I or II for the protection and management of aquatic life. Dissolved oxygen content of these waters shall not be less than 6 mg/l and 7 mg/l or greater may be required at and near spawning areas.

7. Lulls Brook supports an excellent brook trout fishery exhibiting natural reproduction and good growth rates. The penstock-bypassed section of stream is a steep gradient channel of chutes and shallow pools on largely scoured ledge. Such habitat has little direct value for fish production due to a lack of adequate spawning and nursery areas. The shallow pools may provide fish with temporary holding areas particularly during low flow periods of the year. Production of invertebrate food organisms is moderate. The Department of Fish and Game contends that a minimum release in the bypass of 2.0 cfs should adequately maintain pools as temporary sanctuaries for displaced trout.

The proposed dam would not constitute an obstruction to the upstream migration of fish as the steep gradient of chutes in the bypass present a natural barrier for fish passage.

8. No water quality data is available on Lulls Brook at the project site. The Department believes a minimum flow of 2.0 cfs in the bypassed section of stream should be adequate to maintain existing water quality conditions. If inflow falls below 4 cfs (the minimum flow plus the low end of the smaller unit), all flows will be spilled at the dam.

## CONDITIONS

Based on its review, the Department certifies that the proposed facility will not violate Vermont Water Quality Standards provided the following conditions are met:

A. When available from inflow, a minimum instantaneous stream flow of 2.0 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 calculation, and plans for the measure to be used to pass this minimum flow.

B. The facility shall be operated in a strict run-of-the-river mode where instantaneous outflow at the tailrace shall equal instantaneous inflow to the impoundment at all times. The pool may not be drawn down without prior written approval by the Department. When the facility is not operating, all flows shall be spilled at the dam.

C. The applicant shall file for review and written approval, prior to the start of construction, an erosion control and water management plan to cover construction activities. This plan shall address the maintenance of stream flow and measures taken to prevent the discharge of sediment, wet concrete, and other debris into State waters.

D. Debris associated with project construction and operation shall be disposed of properly.

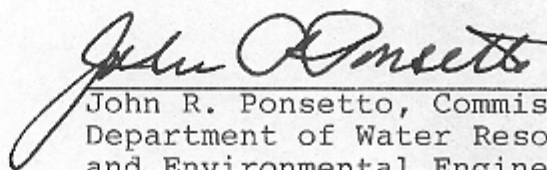
E. Any desilting of the dam impoundment shall be done in accordance with the Agency of Environmental Conservation's

Desilting Policy, a copy of which is attached. The Department shall be contacted prior to any desilting activity.

F. Any significant changes to the project, including operation out of storage, must be submitted to the Department for prior review and written approval.

G. The applicant shall provide the Department with an as-built set of plans for the record.

H. No construction may commence until after the Department issues approval under Condition A and C.

  
John R. Ponsetto, Commissioner  
Department of Water Resources  
and Environmental Engineering

Dated at Montpelier, Vermont  
this 28<sup>th</sup> day of Nov., 1983.

AMD/rh  
Encl.