

WATER QUALITY CERTIFICATION

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

In the matter of: Green Mountain Power Corporation
P.O. Box 486
Montpelier, Vermont 05602
Application for hydroelectric
generation facilities at Bolton Falls

The Water Quality Division of the Vermont Department of Water Resources and Environmental Engineering has examined the information submitted by the applicant and made the following findings:

1. Green Mountain Power Corporation (GMP) owns an abandoned rock-filled timber crib dam with an ashlar-faced masonry dam on the downstream side at Bolton Falls, Town of Waterbury on the Winooski River. The spillway is 10-13 feet wide and 194 feet long at an elevation of 388' NGVD. Two penstocks 8.7 and 11.0 feet in diameter are incorporated in the dam, which is 61 feet high.

2. The dam was originally constructed starting in 1898 and used for electrical power generation through 1938 when it was abandoned. The forebay, intake structures and powerhouses are in ruins.

3. Green Mountain Power proposes to increase the dam height nine (9) feet using a five (5) foot reinforced concrete cap surmounted by four (4) feet of flashboards establishing the maximum normal pool elevation at 397' NGVD. The minimum pool elevation for generation will be 391' NGVD, a six (6) foot drawdown. The maximum pool is within the riverbanks. The usable storage capacity is 215 acre-feet. The maximum backwater during non-flood conditions extends upstream about two (2) miles from the dam.

4. The proposed project would have a turbine-generator unit with a hydraulic capacity of 500 to 2000 cfs at a gross head of 51 feet. The hydraulic design basis for the facility is to receive synchronized flow releases from the Waterbury and Middlesex plants supplemented by unregulated watershed inflow

and Bolton Falls impoundment storage to generate at the total installed capacity of 6.5 megawatts using a flow of 2000 cfs for at least six (6) hours during the daily peak demand. This would be typical during the critical winter period (about December-January). Non-generation periods would be utilized to refill the impoundment. The total generating capacity of the units abandoned in 1938 was 1.65 megawatts.

5. During periods other than critical winter periods, generation would be based on power demands and available storage in basin reservoirs and runoff. As proposed, typically there would be a daily fluctuation in releases between a low flow of 120 cfs and a generation flow between 500 and 2000 cfs.

6. Below Bolton Falls, the Winooski River contains an important salmonid fishery resource, which would be severely diminished if insufficient instantaneous stream flows are released at the dam. Artificially extreme low flows and fluctuation of flows caused during periods of spawning and incubation would interfere with and limit downstream fish propagation.

7. Green Mountain Power originally proposed a minimum flow release during non-generation periods of 120 cfs as a daily average. Green Mountain Power later proposed a minimum flow of 240 cfs during a meeting with the Agency of Environmental Conservation staff held January 9, 1981.

8. The FERC licensing application states that passage of minimum stream flows would be accomplished using a low flow release valve on a 36" diameter pipe drawing from the 8 foot penstock and discharging about 20 feet below the dam into a large tailrace pool.

9. The tailrace pool is considered to be an important fisheries asset.

10. A continuous release of minimum stream flows into the pool as proposed should be sufficient to maintain its level and assure that the water in the pool will continue to meet standards.

11. The Department of Water Resources and Environmental Engineering as a result of field work associated with the Department's Fisheries Flow Needs Assessment Methodology and subsequent analyses completed with the cooperation of the Vermont Department of Fish and Game has determined that the minimum acceptable aquatic base flow for this project is an instantaneous flow of 300 cfs. The species studied were brown and rainbow trout in their various life stages along with food production capabilities of the river to sustain the fishery at different flow regimes. Flows lower than 300 cfs were found to severely restrict macrovertebrate food production, the propagation of fish, and the resident fishery in its different life stages.

12. Passage of a minimum stream flow of 300 cfs during periods when it naturally would be available cannot be guaranteed because of regulation of inflows into Bolton by upstream facilities owned by the applicant. Under natural conditions a flow of 300 cfs would be available 86% of the time during an average year.

13. Stream flows less than 300 cfs are insufficient to maintain the technical requirements for Class B waters under the State Water Quality Standards.

CONDITIONS

In certifying that this project will meet Vermont Water Quality Standards, the Department of Water Resources and Environmental Engineering imposes the following conditions:

A. An instantaneous stream flow of 300 cfs or greater shall be released at all times when available from inflow to the impoundment. When inflow rates fall below 300 cfs the instantaneous outflow rate shall be at least equal to the instantaneous inflow.

B. The applicant shall measure stream flows directly below the project during release of minimum stream flow to demonstrate that the mechanism for releasing minimum stream flows is correctly calibrated such that the release plus leakage equals 300 cfs at the lowest operation head. This data and procedure for releasing 300 cfs shall be submitted to the Department of Water Resources and Environmental Engineering for review within 30 days following first operation of the project.

C. The mechanical details and operational scheme for release of minimum stream flows shall be submitted to the Department of Water Resources and Environmental Engineering for review and approval.

D. Generation flows shall not exceed 2000 cfs, instantaneous release.

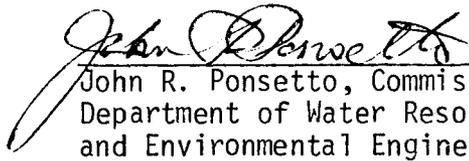
E. During the final engineering phase or earlier, the applicant shall file a comprehensive erosion and sediment control plan with the Department of Water Resources and Environmental Engineering for review and approval. The plan shall cover temporary and permanent measures to limit adverse impacts on water quality from turbidity and sedimentation with regard to all construction activity both within the river channel and outside the channel. It may be beneficial to consult with the Department for input during the development of the plan.

F. The applicant shall insure that every reasonable precaution is taken during construction to limit the discharge of petro chemicals, wet concrete and debris to state waters.

G. Any significant changes to the project must be submitted to the Department of Water Resources and Environmental Engineering for review and approval.

H. A complete description of the seasonal operation of this facility shall be filed with the Department of Water Resources and Environmental Engineering prior to the construction.

I. No construction may commence until the Department of Water Resources and Environmental Engineering has issued written approval for conditions C, E, and G. Operational changes made after project completion are subject to condition G and must be approved prior to effecting the change.


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

Dated at Montpelier, Vermont, this
1st day of April, 1981