

WATER QUALITY CERTIFICATION  
(P.L. 92-500, Section 401)

In the matter of: Mr., Richard Balagur  
Box 68, RFD  
**Thetford Center**, VT 05075  
Application for Great Falls  
Hydroelectric Project

By letter dated April 2; 1985, Mr. Richard Balagur (the applicant) filed an application for a water quality certification with the Vermont Department of Water Resources and Environmental Engineering (the Department) for the Great Falls Hydroelectric Project: The Department has reviewed the Project proposal as outlined in the April, 1985, Federal Energy Regulatory Commission minor license application (FERC No. 9085-000) and subsequent information and modifications filed with the Agency of Environmental Conservation and finds:

1. The applicant proposes to develop a hydroelectric project on U.S. Army Corps of Engineers property on the..

Qmpompanoosuc River at Thetford Center. Development would involve the reconstruction of a dam which is presently in ruins; construction of an intake on the right (west) end of the dam; dredging the approach to the intake; installation of 310 feet of 4.5 foot diameter steel penstock along the right bank'; and construction of a powerhouse 25 foot by 18 foot by 15 foot in exposed height. The powerhouse would contain two equally-sized turbine/generator units with a total capacity of 350 kw at 39.5 feet of net head. A 60 foot by 25 foot wide by 2'-5'

deep **tailrace** would be excavated to convey water back to the stream channel.

2. The proposal is to operate the project semi-automatically, and **run-of-the-river**. Pond storage at six acre-feet is insufficient to operate out of **storage**. The two units would each have a capacity of 67.5 cfs. The proposed, operating range is 10 cfs to 135 cfs.
3. Originally, .5 cfs was proposed as the year-around minimum flow for the **penstock** bypassed section of river. **The applicant has** amended his minimum flow proposal as follows:

<u>Period</u>	<u>Minimum Flow</u>
June 1 - October 15*	32 cfs
October 16 - May 31	5 cfs

\*No operation unless inflow is 52 cfs or greater.

4. In the applicant's January 10, 1987 letter, several project modifications in addition to the changed flow regime were made in order to reduce the environmental **impact**. These included reorienting the intake parallel, to the river; installing **the trashracks below** river level; and rerouting the **penstock** to pass along the existing roadway and burying it along its entire length. All these changes are **considered to** be an amendment of the applicant's Water Quality **Certification application**.

5. The Onipompanoosuc River has been **designated** by the Water Resources **Board** as Class B waters. The management **objective for** Class B waters **under Vermont Water Quality Standards** is to achieve and maintain a high level of quality compatible with certain beneficial values and uses. The management value is a water quality which consistently exhibits good aesthetic value and provides high quality habitat for aquatic **biota, fish** and wildlife. Uses include public **water** supply with filtration and disinfection; irrigation and other agricultural uses: swimming: and recreation.
6. The watershed area at the site is approximately 64 square miles. **The U.S. Geological Survey** has operated a gaging station (No. 01141500) **at Union Village** on the Onipompanoosuc River since water year 1941. The watershed **area at the gage**, which is below the Corps flood control reservoir, is 130 square miles.. Based on a drainage area proportionation, the 7Q10 and mean annual flow for the project site can be estimated at 4 1/2 cfs and 95 cfs (20.~27 inches/year), respectively.
7. The project would **use-on the long-term** approximately half of the water available at the site. The spillage **flows** would be comprised of the minimum flow release or flows which exceed the project capacity. Natural flows in the bypassed section would only be experienced about one-quarter **of the time**, when the project is unable to

generate because inflows are less than the minimum flows plus the low end of one turbine.

8. The Department **denied the water quality certification** for the Great Falls **Hydroelectric** Project on September 21, 1986. This denial was based on findings that related to several adverse impacts, including the intrusion of the project civil works into a natural area; the undue **adverse impact** on **the** beauty of the area; the conversion of the walking pathway adjacent to the cascade to a construction road; the imposition of an artificial flow regime; and the restriction of public access to the river.

The **applicant** appealed this decision to the Water Resources **Board which found that the** Department had considered impacts on **the water** resource outside their jurisdiction **under** the State Water Quality Standards and that these broader issues can only **be fully** addressed in **the** **FERC** licensing process. As a result of the Board decision, the Agency will continue to strongly oppose the project before **FERC** on the grounds of unmitigable impacts on recreation and aesthetics.

9. The applicant collected early morning dissolved oxygen (D.O.) samples on July 30, 1985 during a period of low flow. D.O. **levels** increased about  $1 \frac{1}{2}$  mg/l through reaeration over the cascades. Samples at the head of the cascade were about 7.2 mg/l at 18.0°C (88% saturation). The river is designated cold water fish habitat under Vermont Water quality Standards. The minimum technical

requirements for such waters are 6 mg/l or 70% saturation, with higher standards set for salmonid spawning and incubation. The limited data available indicates that the cascades help maintain D.O. concentrations within standards during critical water quality periods. Operation of the project in a strict run-of-the-river mode with 32 cfs as a minimum summer flow would be unlikely to result in a violation of the technical standards for D.O.

18. An island is located at the base of the cascade: The tailrace discharges into the right channel.- The fisheries potential in the bypassed section is limited and there is no special need for maintenance of additional flows in either or both channels for fishery purposes.
11. By letter dated May 6, 1986, the applicant filed detailed, "information on the dredging and excavation work to be done at the headworks and tailrace. The greatest proportion of the material to be removed is bedrock.. At both locations, the estimated overburden to be excavated was 5 cu. yds. At the intake and tailrace, 135 cu. yds. and 45 cu. yds. of rock are to be removed instream, respectively. Normal construction techniques would be able to contain the discharge of sediment from the work area during construction.

## Conditions

The Department finds that the proposed Great Falls Hydroelectric Project will **not** have an undue adverse effect on water quality and **will** meet State Water Quality Standards with the following conditions:

- A. **The project shall be operated** in accordance with the minimum flow regime table **in Finding #3**. The project **shall not be operated when the** instantaneous project inflow is less than 52 cfs during the period June 1 - October 15 and 15 cfs during the period October 16 - May 31. **This flow regime is for** the bypassed portion of river **including** the falls proper. Whenever there **is** insufficient inflow to both operate **the project** and meet **these** minimum flow requirements, the project will be shut down and all inflows spilled **at the** dam.

Before the start of construction, the applicant shall furnish the Department with a description, hydraulic design calculations, and plans for the measure to be used to **maintain this** minimum flow regime. The Department shall review this information to assure that 1) it meets the technical requirements of this condition and 2) the **distribution** of the 'artificial spillage across the **dam** crest will mitigate insofar as possible the, loss of flow over the falls. No construction is to commence until after the **Department** has issued' written **approval of** this plan.

- B. 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.
- C. 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 measures to be taken to prevent the discharge of sediment 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.
- D. 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. This plan shall include provisions to:
- 1) minimize passage of fish into generating units **if** injury or mortality can result;
  - 2) minimize impingement of fish on intake screens, trashracks or other such devices; and
  - 3) 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.'

- E . 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.
- F. Debris associated with project construction and operation, including trashrack **debris, shall be** disposed of properly.
- G. 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.
- H. Any significant changes to the project,. including project **operation**, must be submitted to the Department for prior review and written approval.
- I . 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.
- J. No construction may commence until after the Department has issued written approval under conditions A, C, and **H** and until Fish and Wildlife has issued written approval under Condition D. Operational changes made after project completion are subject **to Condition H** and must be approved prior to effecting the change.

K. The applicant shall notify the Department when project **construction has** been completed. This shall be done in writing **within** two weeks of completion.

The Department maintains continuing jurisdiction over water quality aspects **of this** project **including** resource, management provision of the Vermont Water Quality Standards.

Dated at Montpelier Vermont this 9<sup>th</sup> day of July, 1987.

Water Resources Board

Catharine B. Rachlin  
Catharine B. Rachlin, Chairman

William Boyd Davies  
William Boyd Davies

David M. Wilson  
David M. Wilson

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