

STATE OF VERMONT

Water Resources Board

RE: Chace Mill Hydroelectric Facility
City of Burlington **Electric** Dept.

'Findings of Fact, Conclusions of
Law and Order.
10 V.S.A., §1269
Appeal of City of Winooski

Introduction

On August 14, 1981 the City of Winooski filed an appeal with the Vermont **Water Resources Board** under the provisions of 10 V.S.A., §1269 from the decision of the Commissioner of the Department of Water Resources dated July 22, 1981 to issue a Water Quality Certification to the City of Burlington for the **proposed Chace Mill Hydroelectric** facility. The **Water Resources Board** identified the following parties in interest in this proceeding:

1. City of Burlington
2. City of Winooski
3. Vermont **Department of** Water Resources
4. Chittenden County Regional Planning Commission
5. Winooski Valley Park District
6. **Ray Pecor, Jr.**
7. **Woolen Mill Associates**

A hearing on this matter was held in Winooski, Vermont on February 19, 1982. In the **course** of this proceeding the **following documents** were accepted into evidence:

1. Burlington Electric Department Exhibit 1: An undated site plan drawing entitled "**Chace Mill Hydroelectric** Development" prepared by Kleinschmidt & Dutting.
2. Burlington Electric Department Exhibit 2: A letter dated January 8, 1980 addressed to **David L. Clough**, Vermont Department of **Water Resources** from Andrew Sims of Kleinschmidt & Dutting, enclosing a document entitled "**Chace Mill Hydroelectric** Project Application for Water Quality Certification;"
3. Burlington Electric Department Exhibit 3: A document entitled "Erosion and Sedimentation Control Plan for Burlington Electric Department, Burlington, **Vermont.**"
4. Burlington Electric Department Exhibit 4: A Water Quality Certification issued to the City of Burlington **Electric Department** by John Ponsetto, Commissioner of the Vermont Department of Water Resources on July 22, 1981.
5. Burlington Electric Department Exhibit 5: A document dated July 15, 1981 entitled "**Responsiveness Summary - Chace Mill Hydroelectric** Project."
6. Winooski Exhibit 1: A document entitled "Agreement for Joint Ownership, Construction and Operation of the Chace Mill Hydroelectric Project by the City of **Burlington Electric** Light Department and Green Mountain Power Corporation."

7. Chittenden Regional Planning Commission Exhibit 1: A statement on behalf of the Chittenden Regional Planning Commission by Arthur Hogan, Jr., Executive Director dated February 26, 1982.

In the course of this proceeding the Vermont Water Resources Board took **official** notice of the following documents;

1. The Vermont Water Resources Board Classification Order for the **Lower Winooski River Basin, dated June 9, 1969.**
2. The Vermont Water Quality Standards, adopted by the Vermont Water **Resources Board, effective March 7, 1978.**

Findings of Fact

1. The City of Burlington by the Burlington Electric Department proposes to **construct** a hydroelectric-generating facility on the Winooski River in the Cities of Burlington and Winooski at the site of the Chace Mill (hereinafter Chace Mill facility) located **750 feet** upstream of the U. S. Routes 2 and 7 bridge.
2. The Chace Mill facility consists of a 400 foot long stanchion **stoplog** dam, 12 feet in height,, a 50-acre impoundment with a 400 acre-foot storage capacity, an **intake** structure, a 2,000 foot **long tunnel**, and a powerhouse.:
3. The Chace Mill facility **will** be operated in a run-of-the river mode with the instantaneous inflows to the 50-acre impoundment equaling the **instantaneous outflows downstream** of the tailrace.
4. The **7Q10** flow is the minimum rate of flow at which the requirements of the Vermont Water Quality Standards (rule 7) apply to a discharge.
5. The **7Q10** flow for the Winooski River at the site of **the project** is 146 cubic **feet per second** (hereinafter c.f.s.).
6. The flow regime of the Winooski River at the project site is regulated by upstream dams **in such** a manner that there are times each year when actual flows are substantially less than 146 **c.f.s.**
7. At **all** times when the instantaneous inflows to **the 50-acre** impoundment meet or exceed the rate of 146 **c.f.s.**, a discharge of 146 **c.f.s.** will be passed through the dam. At all other times, the instantaneous outflows passed through the dam will equal the instantaneous inflows to the **50-acre** impoundment.
8. All flows in excess of 146 c.fs. when sufficient for generation up to a maximum of 3,000 **c.f.s.** will be diverted to the powerhouse, via the tunnel, for the generation of **electrical energy**. Flows in excess of 3,000 **c.f.s.**, which **is** the 'design capacity' of the tunnel, will be passed through the dam.
9. The dam will be constructed in two stages during a time of year when flows are historically low. Earthen coffer dams will be used to isolate the construction site from **the Winooski River**.

10. Construction of the rock tunnel between the intake structure and the **powerhouse will require** the pumping of groundwater from the construction site to a settling lagoon **prior to** discharge to the Winooski River for a period of up to 14 months.
11. The impact on water quality of the construction, generally described in findings 9 and 10 above, will be minimized by the implementation of erosion control measures as shown by Burlington Exhibit 3 including any modifications which may be required by the **Agency of Environmental Conservation**.
12. The impact of the **Chace Mill** facility on common food and game fish indigenous to the project site will be mitigated by:
 - a. -A fish trapping and sorting facility constructed to collect fish migrating upstream which may be attracted to the **tailrace** outfall **for eventual** transport and release at designated upstream locations.
 - b. A hydraulic design, to be prepared by the applicant and approved by the Agency of **Environmental Conservation**, will maintain water levels in the Salmon Hole portion of the Winooski River sufficient for walleye spawning.
13. The Winooski River at the project site is classified as Class C waters by the Water Resources **Board's** Classification Order for the Winooski River and its Tributaries dated June 9, 1969 and is further designated as Water Management Type 'II by rule 6 of the Vermont Water Quality Standards.
14. The minimum dissolved oxygen level required by the Vermont Water Quality Standards for **Class C Waters** Management Type II is 6 milligrams per liter.
15. The dissolved oxygen **levels** in the Winooski River in the vicinity of the Chace Mill facility are occasionally less than 6 milligrams per liter due to a variety of **factors** the principal of which are the cumulative effect of nutrient loading due to **the upstream** discharges from municipal wastewater treatment facilities and the reduction in flow by upstream hydroelectric facilities.
16. **There is** a generally direct relationship between rate of flow and dissolved oxygen levels in any river. However, flows of less than 7Q10 do not necessarily result in a reduction of **dissolved oxygen** levels below the **requirements** of the Water Quality Standards,
17. The Chace Mill **facility** will not significantly reduce dissolved oxygen levels in the Winooski River even during periods when flows are **at or below 7Q10**.
18. The only discharge from the Chace Mill facility into the Winooski River will be the water passing through the dam and the tailrace.
19. The Chace Mill facility will not discharge any waste which may be **deleterious** to the water quality of **the Winooski River** and will not degrade the water quality with regard to any of the technical requirements for Class C waters as specified in rule 5(c) of the Water Quality Standards.

Conclusions of Law

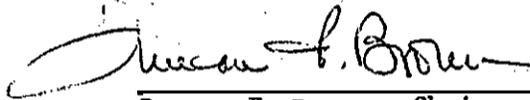
1. The Water Quality Certification issued by the Vermont Department of Water Resources on July 22, 1981 in accordance with the provisions of section 401 of Public Law 92-500 pertains to the discharge to the Winooski River of water released at the dam and the tailrace of the Chace Mill Hydroelectric Facility.
2. The issuance or denial of the Water Quality Certification is an act or decision of the Vermont Water Resources Department under its responsibility to manage state waters as required by subchapter 1 of Chapter 47, 10 V.S.A. The Vermont Water Resources Board has jurisdiction over appeals from such acts or decisions under the provisions of 10 V.S.A., §1269.
3. The discharge to the Winooski River of waters released at the dam and the tailrace of Chace Mill Hydroelectric facility will not significantly affect the existing water quality in the Winooski River; will not reduce the quality of the receiving waters below the classification established for them; and will not result in, the violation of any applicable provisions of the Vermont Water Quality Standards, provided that the conditions set forth in the Water Quality Certification issued by the Vermont Department of Water Resources on July 22, 1982 are fully complied with.

Order

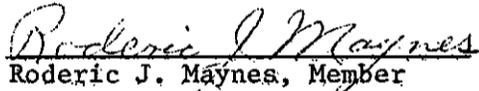
On the basis of the above findings of fact and conclusions of law, the Vermont Water Resources Board hereby orders that the Water Quality Certification issued for the Chace Mill Hydroelectric facility by the Department of Water Resources dated July 22, 1981 be affirmed in all respects without modification..

Done this 26th day of April 1982, at Montpelier, Vermont,

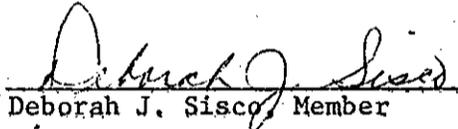
Vermont Water Resources Board



Duncan F. Brown, Chairman



Roderic J. Maynes, Member



Deborah J. Sisco, Member

7. Chittenden Regional Planning Commission Exhibit 1: A statement on behalf of the Chittenden Regional Planning Commission by Arthur Hogan, Jr., Executive Director dated February 26, 1982.

In the course of this proceeding the Vermont Water Resources Board took official notice of the following documents:

1. The Vermont Water Resources Board Classification Order for the Lower Winooski River Basin, dated June 9, 1989.
2. The Vermont Water Quality Standards, adopted by the Vermont Water Resources Board, effective March 7, 1978,

In accordance with rules 9 and 10 of the Water Resources Board's "Rules of Procedure for the Chace Mill Water Quality Certification Appeal" the Vermont Water Resources Board makes the following preliminary findings of fact:

Preliminary Findings of Fact

1. The City of Burlington by the Burlington Electric Department proposes to construct a hydroelectric generating facility on the Winooski River in the Cities of Burlington and Winooski at the site of the Chace Mill (hereinafter Chace Mill facility) located 750 feet upstream of the U.S. Routes 2 and 7 bridge.
2. The Chace Mill facility consists of a 400 foot long stanchion stoplog dam 12 feet in height, a 50-acre impoundment with a 400 acre-foot storage capacity, an intake structure, a 2,000 foot long tunnel, and a powerhouse.
3. The Chace Mill facility will be operated in a run-of-the river mode with the instantaneous inflows to the 50-acre impoundment equaling the instantaneous outflows through the dam.
4. The 7Q10 flow refers to a low flow condition occurring during a seven consecutive day period which has a ten percent chance of occurring in any given year where the flow regime is not regulated by dams or similar man-made structures.
5. The 7910 flow for the Winooski River at the site of the project is 146 cubic feet per second (hereinafter c.f.s.).
6. The flow regime of the Winooski River at the project site is regulated by upstream dams in such a manner that is common for actual flows to be substantially less than 146 c.f.s..
7. At all times when the instantaneous inflows to the 50 acre impoundment meet or exceed the rate of 146 c.f.s., a discharge of 146 c.f.s. will be maintained through the dam. At all other times, the instantaneous outflows through the dam will equal the instantaneous inflows to the 50-acre impoundment.
8. All flows in excess of 146 c.f.s. up to a maximum of 3,000 c.f.s. will be diverted to the powerhouse, via the tunnel, for the generation of

electrical energy. Flows in excess of 3,000 c.f.s., which is the design capacity of the tunnel, will be passed through the dam

9. The dam will be constructed in two stages during a time of year when flows are historically low. Earthen coffer dams will be used to isolate the construction site from the Winooski River.
 10. Construction of the rock tunnel between the intake structure and the powerhouse will require the pumping of groundwater from the construction site to a settling lagoon prior to discharge to the Winooski River for a period of up to 14 months.
 11. The impact of the construction generally described in findings 9 and 10 above on water quality will be minimized by the implementation of erosion control measures as shown by Burlington Exhibit 3.
 12. The impact of the Chace Mill facility on common food and game fishes indigenous to the project site will be mitigated by:
 - a. Constructing a fish trapping and sorting facility located immediately downstream from the powerhouse to collect fish migrating upstream which may be attracted to the tailrace outfall for eventual transport and release at designed upstream locations; and
 - b. Taking measures to maintain water levels in the Salmon Hole portion of the Winooski River in order to protect walleye spawning beds.
 13. The Winooski River at the project site is classified as Class C waters by the Water Resources Board's Classification Order for the Winooski River and its Tributaries dated June 9, 1969 and is further designated as Water Management Type II by rule 6 of the Vermont Water Quality Standards.
 14. The minimum dissolved oxygen level required by the Vermont Water Quality Standards for Class C waters of Water Management Type II is 6 milligrams per liter.
 15. The dissolved oxygen levels in the Winooski River in the vicinity of the Chace Mill facility are occasionally less than 6 milligrams per liter due to a variety of factors the principal of which are the cumulative effect of nutrient loading due to the upstream discharges from municipal wastewater treatment facilities and the reduction in flow by upstream hydroelectric facilities.
 16. There is a generally direct relationship between rate of flow and dissolved oxygen levels in any river. However, flows of less than 7Q10 do not necessarily result in a reduction of dissolved oxygen levels below the requirements of the Water Quality Standards.
 17. The Chace Mill facility will not significantly reduce dissolved oxygen levels in the Winooski River during periods when flows are at or below 7Q10.
 18. The only discharges from the Chace Mill facility into the Winooski River will be the water passing through the dam and the tunnel.
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19. The Chace Mill facility will not discharge any waste which may be dilatorious to the water quality of the Winooski River and will not degrade water quality with regard to any of the technical requirements for Class C waters as specified in rule 5(c) of the Water Quality Standards.
20. The Chace Mill facility will not significantly affect the existing water quality in the Winooski River.

All parties to this proceeding shall have until April 19, 1982 to file exceptions to these findings at which time this proceeding shall be adjourned. Exceptions to these findings should be filed with the Vermont Water Resources Board, State Office Building, Montpelier, Vermont 05602.

Done this 30th day of March, 1982, at Montpelier, Vermont.

For the Water Resources Board



William A. Bartlett
Executive Secretary