

# GABRIELA GOLDFARB CONSULTING

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October 8, 2004

Fred Ayer, Executive Director  
Low Impact Hydropower Institute  
34 Providence St.  
Portland, ME 04103

Subject: Final Application Reviewer Report for the Winooski One Hydroelectric Project (FERC No. 2756)

Dear Fred:

Attached please find my reviewer's report on the application by Winooski One Partnership for certification of the Winooski One Hydroelectric Project by the Low Impact Hydropower Institute (LIHI). Please contact me with any questions or concerns.

Best regards,

s//Gabriela

Gabriela Goldfarb

Attachment: as described.

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**Review of Low Impact Hydropower Institute Application  
for Low Impact Hydropower Certification:  
Winooski One Hydroelectric Project**

**Introduction and Overview**

This report reviews the application submitted by Winooski One Partnership (applicant) to the Low Impact Hydropower Institute (LIHI) for Low Impact Hydropower Certification for the Winooski Hydroelectric Project (project or facility) in the cities of Burlington and Winooski in Chittenden County, Vermont. The facility has also been known as the “Chase Mill Hydroelectric Project.” The Federal Energy Regulatory Commission (FERC) issued the project a license (FERC 2756) in 1988 for the operation and maintenance of the 7.4 megawatt, run-of-river facility.

Project and site characteristics. The facility is located at lower Winooski Falls on the Winooski River ten miles upstream of its confluence with Lake Champlain, between the city of Winooski, on the north bank, and the city of Burlington, on the south bank. This run-of-river facility has a refurbished spillway with crest gates abutting a historic timber crib dam that dates from 1876. The dam is on the National Register of Historic Places as part of the Winooski Falls Mill District. There are two plant species listed by the state as threatened and endangered in the vicinity of the project that were the subject of mitigation and protection activities at the time of the facility’s construction. The applicant also constructed fish passage facilities and a riverside park and trail as part of the project.

The project, constructed in 1991-93, consists of a 200-foot-long, 35-foot-high concrete dam situated immediately downstream and abutting the timber-crib dam surmounted by a 100-foot-long, eight-foot-high bascule gate with crest elevation of 136 feet NGVD; a 36-foot-long bascule gate located at the right abutment; a 5.7 acre reservoir; a 70-foot-long intake powerhouse containing one 6.5 MW turbine generator; a 45-foot-wide, 125-foot-long tailrace; a fish trap facility; a riverside park; an underground transmission cable; and an access road.

Project owner Winooski One Partners leases the site and water rights from the City of Burlington. The City of Burlington has the option to buy the facility in the 20<sup>th</sup> year of the license; the license is held jointly by Winooski One Partners and the city.

Nearly every one of the federal, state, and local agency staff contacted in the course of this review commented that the applicant had demonstrated extraordinarily good corporate citizenship in carrying out and often exceeding the requirements associated with the project’s construction and operation.

Public comment letters. LIHI did not receive any comment letters.

General conclusions. I am able to state without reservation that this project appears to comply thoroughly with LIHI criteria.

**Recommendation.** Based on my review of information submitted by the applicant, my review of additional documentation, and my consultations with resource agency staff, I believe the Winooski One Hydroelectric Project meets all of the criteria to be certified and I recommend certification.

## Low Impact Certification Criteria

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### A. *Flows*

- 1) **Is the Facility in Compliance with Resource Agency Recommendations issued after December 31, 1986 regarding flow conditions for fish and wildlife protection, mitigation and enhancement (including in-stream flows, ramping and peaking rate conditions, and seasonal and episodic instream flow variations) for both the reach below the tailrace and all bypassed reaches?**

**YES.**

The project's FERC license requires a continuous minimum flow over the dam's spillway crest of 168 cubic feet per second. In a September 13, 2004 telephone conversation, Vermont Agency for Natural Resources, Department of Environmental Conservation, Water Quality Division (ANR) staff explained that the location and physical attributes of the Winooski project lead him to believe that the facility has remained in compliance with its bypass flow requirements. These are that 1) since the flows are spilled over the flashboards, their absence would be noted in this heavily urbanized context and reported; 2) the river flow is large relative to the project size; 3) the bypass reach is very short, with a backwater created from the tailrace up to the dam itself, such that no habitat can be dewatered. ANR staff explained that the reason for the flow requirement was reaeration due to dissolved oxygen concerns. The applicant performed a post-construction water quality study (required by ANR through the Clean Water Act Section 401 certification prepared in conjunction with project licensing), and no additional measures were warranted. The applicant has a FERC-approved and ANR-reviewed stream flow gauging plan in place. The applicant certified to FERC that it has complied with minimum flow requirements, most recently in early 2003 for the 2002 calendar year.

*If YES, go to B.*

**PASS**

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### B. Water Quality

- 1) **Is the Facility either:**
  - a) **In Compliance with all conditions issued pursuant to a Clean Water Act Section 401 water quality certification issued for the Facility after December 31, 1986? Or**

- b) In Compliance with the quantitative water quality standards established by the state that support designated uses pursuant to the federal Clean Water Act in the Facility area and in the downstream reach?**

**YES**

In a July 1, 2004 letter ANR stated that "...Winooski One has been and is currently in compliance with the water quality certification dated May 5, 1987."

*If YES, go to B2.*

- 2) Is the Facility area or the downstream reach currently identified by the state as not meeting water quality standards (including narrative and numeric criteria and designated uses) pursuant to Section 303(d) of the Clean Water Act?**

**YES**

The Clean Water Act section 303(d) list of impaired waters lists the Winooski River, and all Vermont rivers, for mercury.

*If YES, go to B3.*

- 3) If the answer to question B.2 is yes, has there been a determination that the Facility is not a cause of that violation?**

**YES**

ANR staff confirmed in a September 13, 2003 telephone conversation that the facility is not a cause of the violation.

*If YES, go to C.*

**PASS**

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### **C. Fish Passage and Protection**

- 1) Is the Facility in Compliance with Mandatory Fish Passage Prescriptions for upstream and downstream passage of anadromous and catadromous fish issued by Resource Agencies after December 31, 1986?**

**YES**

FERC required construction of “a trap-and-truck facility immediately downstream of the project dam to ensure upstream fish passage and a facility to ensure downstream fish passage past the project dam” consistent with recommendations of the U.S. Fish and Wildlife Service (FWS) and ANR. According to a July 14, 2004 letter from FWS the facility began operating in 1993 to facilitate passage of steelhead rainbow trout in the spring and landlocked Atlantic salmon in the fall. In a September 9, 2004 telephone conversation, FWS added migratory walleye to this list. While in this case the fish are migrating upstream from Lake Champlain (i.e., continuously in fresh water), the requirement is categorized as anadromous fish passage. The FWS July 14, 2004 letter states:

This fish passage facility is a key component of the Lake Champlain Fish and Wildlife Cooperative’s salmonid restoration program as it allows salmon access to important spawning and nursery areas previously inaccessible for over a century. To the best of my knowledge, Winooski One has strived to operate in compliance with all their fish passage permit conditions.

The letter goes on to praise the applicant and its staff for enthusiastic cooperation in ensuring the most effective operation of the lift, in processing lifted fish, and in assisting public agency staff with juvenile fish stocking at the facility.

In a July 1, 2004 letter ANR stated that “...Winooski One has been and is currently in compliance with the water quality certification dated May 5, 1987.” That certification included a condition that the ANR Department of Fish and Wildlife (ANR-DFW) approve fish passage at the facility. ANR-DFW is a partner with FWS in the Lake Champlain Fish and Wildlife Management Cooperative that oversees operation of the Winooski River fish passage facilities.

*If YES, go to C5.*

**5) Is the Facility in Compliance with Mandatory Fish Passage Prescriptions for upstream and/or downstream passage of *Riverine* fish?**

**NOT APPLICABLE.**

There are no such recommendations.

*If NOT APPLICABLE, go to C6.*

**6) Is the Facility in Compliance with Resource Agency Recommendations for Riverine, anadromous and catadromous fish entrainment protection, such as tailrace barriers?**

**NOT APPLICABLE**

There are no such recommendations.

*If NOT APPLICABLE, go to D*

**PASS.**

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**D. Watershed Protection**

**1) Is the Facility in Compliance with Resource Agency Recommendations, or, if none, with license conditions, regarding protection, mitigation or enhancement of lands inundated by the Facility or otherwise occupied by the Facility, and regarding other watershed protection, mitigation and enhancement activities?**

**NOT APPLICABLE**

There are no such recommendations or license conditions.

*If NOT APPLICABLE, go to E.*

**PASS**

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**E. Threatened and Endangered Species Protection**

**1) Are threatened or endangered species listed under state or federal Endangered Species Acts present in the Facility area and/or downstream reach?**

**YES**

The state's Clean Water Act Section 401 certification identified two plant species, *Carex garberi* (state listed as threatened) and *Anemone multifida* (state listed as endangered) in or near the project site. FWS confirmed in a September 9, 2004 email that there are no known occurrences of federally listed species at or downstream of the facility other than transient bald eagles.

*If YES, go to E2.*

- 2) **If a recovery plan has been adopted for the threatened or endangered species pursuant to Section 4(f) of the Endangered Species Act or similar state provision, is the Facility in Compliance with all recommendations in the plan relevant to the Facility?**

**NOT APPLICABLE**

*If NOT APPLICABLE, go to E3.*

- 3) **If the Facility has received authority to incidentally *Take* a listed species through: (i) Having a relevant agency complete consultation pursuant to ESA Section 7 resulting in a biological opinion, a habitat recovery plan, and/or (if needed) an incidental Take statement; (ii) Obtaining an incidental Take permit pursuant to ESA Section 10; or (iii) For species listed by a state and not by the federal government, obtaining authority pursuant to similar state procedures; is the Facility in Compliance with conditions pursuant to that authority?**

**YES**

The state's Clean Water Act Section 401 certification required the applicant to mitigate losses of the state-listed *Carex garberi* associated with construction of the facility, and to protect the state-listed *Anemone multifida* plants located outside the construction limits. In a September 17, 2004 telephone conversation the lead ANR-DFW botanist confirmed that the facility owners complied with all requirements and everything asked of them and that no new endangered species concerns had arisen since the project was licensed.

*If YES, go to E4.*

- 4) **If a biological opinion applicable to the Facility for the threatened or endangered species has been issued, can the Applicant demonstrate that:**
- a) **The biological opinion was accompanied by a FERC license or exemption or a habitat conservation plan? Or**
  - b) **The biological opinion was issued pursuant to or consistent with a recovery plan for the endangered or threatened species? Or**
  - c) **There is no recovery plan for the threatened or endangered species under active development by the relevant Resource Agency? Or**
  - d) **The recovery plan under active development will have no material effect on the Facility's operations?**

**YES**

There is no recovery plan for the state-listed species under active development by ANR-DFW.

*If YES, go to F*

**PASS**

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## **F. Cultural Resource Protection**

- 1) If FERC-regulated, is the Facility in Compliance with all requirements regarding Cultural Resource protection, mitigation or enhancement included in the FERC license or exemption?**

**YES**

In an October 6, 2004 telephone conversation Vermont Division of Historic Preservation staff stated that the facility had complied with all requirements of its FERC license, which pertain to visual character compatibility and cultural resources management.

*If YES, go to G.*

**PASS**

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## **G. Recreation**

- 1) If FERC-regulated, is the Facility in Compliance with the recreational access, accommodation (including recreational flow releases) and facilities conditions in its FERC license or exemption?**

**YES**

FERC required the facility to construct a walkway, maintain an existing public access trail, and provide \$150,000 to the City of Winooski to pay for walkway improvements. The City of Winooski confirmed in a September 10, 2004 telephone conversation that the facility owners met and exceeded their obligations under the FERC license in terms of both historic preservation and recreation, including payment of the required \$150,000 and maintenance of public access and landscaping, including voluntarily maintaining some adjacent city-owned parcels.

*If YES, go to G3.*

- 3) Does the Facility allow access to the reservoir and downstream reaches without fees or charges?**

**YES**

*If YES, go to H.*

**PASS**

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**H. Facilities Recommended for Removal**

**1) Is there a Resource Agency Recommendation for removal of the dam associated with the Facility?**

**NO**

*If NO, facility is low impact.*

**PASS**

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**FACILITY IS LOW IMPACT**

## RECORD OF CONTACTS

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Date of Conversation: September 9, 2004  
Application Reviewer: Gabriela Goldfarb, Consultant  
Person Contacted: John Warshow, Winooski One Partners  
Telephone/email: 802-223-7141  
Areas of Expertise: Project Owner

He replied with a telephone call to my emailed request for clarification on the following issues:

- Ownership – Winooski One Partners leases the site and water rights from the City of Burlington. The City of Burlington has the option to buy the facility in the 20<sup>th</sup> year of the license; the license is held jointly by Winooski One Partners and the city.
- Date of Construction – December 13, 1991 to April 1, 1993
- Contacts for Cultural Resource Protection Questions – Steve Cease, Director of Planning, VT-ANR, 802-241-3620; Eric Gilbertson or Giovanna Peebles, VT Div. for Hist. Preservation, 802-828-3211; Jim Trzpacz, City of Winooski, 802-655-6410.
- Contacts for Recreation Resource Protection Questions – Jennifer Ely, Winooski Valley Park District, 802-863-5744, Steve Cease, Director of Planning, VT-ANR, 802-241-3620; Jim Trzpacz, City of Winooski, 802-655-6410.

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Date of Conversation: September 9, 2004  
Application Reviewer: Gabriela Goldfarb, Consultant  
Person Contacted: Anthony Tur, New England Field Office, USFWS  
Telephone/email: <Anthony\_Tur@fws.gov>  
Areas of Expertise: Endangered Species

In response to my 9/2/04 email to Michael Amaral, USFWS, I received the following email response from his staff person Tony Tur:

As requested, we reviewed our records to determine if endangered species may be effected by the hydroelectric facility located in Winooski, Vermont. Our records indicate that no know occurrences, other than transient bald eagles, are documented at or downstream off the facility.

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Date of Conversation: September 9, 2004  
Application Reviewer: Gabriela Goldfarb, Consultant  
Person Contacted: Giovanna Peebles, VT Div. Historic Preservation  
Telephone/email: 802-828-3050  
Areas of Expertise: Historic Preservation

Asked her about facility's compliance with cultural resource protection requirements of FERC license, and any other concerns. She said she did not believe that the provisions of Article 414, regarding discovery of archeologically or historically significant objects, applied (i.e., nothing

was found during construction). However, she did not recall substance of other provisions and compliance this long after the fact, and requested I send her a copy of the relevant FERC license articles, that I ask the facility owner to retrieve relevant papers documenting compliance because she cannot readily access them, and that I call her the week of September 20 to follow up.

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Date of Conversation: September 10, 2004  
Application Reviewer: Gabriela Goldfarb, Consultant  
Person Contacted: Jim Trzpacz, City of Winooski  
Telephone/email: 802-655-6410 x 17  
Areas of Expertise: City Natural Resource and Historic Preservation Concerns

Mr. Trzpacz confirmed that Winooski One Partners met and exceeded their obligations under the FERC license in terms of both historic preservation and recreation, including payment of required \$150,000, maintenance of public access and landscaping (maintain some city-owned parcels adjacent). He reports them to be excellent corporate citizen.

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Date of Conversation: September 13, 2004  
Application Reviewer: Gabriela Goldfarb, Consultant  
Person Contacted: Jeff Cueto, VT Water Quality Division  
Telephone/email: 802-241-3758  
Areas of Expertise: Water Quality, Flows, 401 cert

Cueto explained that the physical attributes of the Winooski project leads him to believe that the facility has remained in compliance with its bypass flow requirements. These are that 1) since the flows are spilled over the flashboards, their absence would be noted in this heavily urbanized context and reported; 2) the river flow is large relative to the project size; 3) the bypass reach is very short, with a backwater created from the tailrace up to the dam itself, such that no habitat can be dewatered. Cueto explained that the critical reason for the flow requirement was reaeration due to dissolved oxygen concerns. The applicant performed the post-construction water quality study required by the certification, and no additional measures were warranted. Cueto confirmed that the river is now classified as a “Class B” water as identified by the applicant in his application (there no longer are any Vermont waters classified as Class C, as was the case in 1987 and as was reflected in the 401 certification). To date, the project has not sought to de-silt. The facility has done drawdowns for repairs, and has always notified and gotten approval for such activities. The stretch of Winooski River occupied by the facility is in a waste management zone due to discharges from wastewater facilities. The river is 303(d) listed only for mercury (as are all VT rivers); the facility is not a contributor of that pollutant.

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Date of Conversation: September 17, 2004  
Application Reviewer: Gabriela Goldfarb, Consultant  
Person Contacted: Bob Popp, Botanist, VT Fish & Wildlife  
Telephone/email: 802-476-0127  
Areas of Expertise: Endangered Species

He confirmed that 1) the facility owners complied with all requirements and everything asked of them; and 2) no new endangered species concerns have arisen since the project was licensed. He noted that the facility owners were unusually cooperative.

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Date of Conversation:           October 6, 2004  
Application Reviewer:        Gabriela Goldfarb, Consultant  
Person Contacted:            Giovanna Peebles, VT Div. of Historic Preservation  
Telephone/email:             802-828-3211  
Areas of Expertise:            Cultural Resources

Ms. Peebles performed a review of the Division's Winooski files and confirmed that the facility complied with all its cultural resource protection requirements.

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