

Rumney Residential Hydropower Project  
Steve Bolles, Property Owner  
2530 Buffalo Road  
Rumney, New Hampshire 03266

## WATER QUALITY CERTIFICATION

In Fulfillment of

NH RSA 485-A: 12

WQC # 2012-485A12IV-004

---

Activity Name	Rumney Residential Hydropower Project
Activity Location	2530 Buffalo Road Rumney, New Hampshire 03266
Affected Surface waters	Unnamed Brook NHRIV700010305-19 extending from Willoughby Mountain in the White Mountain National Forest to the Baker River
Owner/Applicant	Steven Bolles 2 Lafayette Road Londonderry, NH 03053
DATE OF APPROVAL (subject to Conditions below)	February 5, 2013

---

### A. INTRODUCTION

Steven Bolles (Applicant) proposes to install a hydropower turbine for off-grid power generation at a residential site in Rumney, NH (the Activity). The proposed project will divert water from an unnamed brook running through the property to a small hydropower generator. A detailed description of the proposed Activity is provided in item D-1 below.

This Water Quality Certification (WQC) documents laws, regulations, determinations and conditions related to the Activity for the attainment and maintenance of NH surface water quality standards, including the provisions of NH RSA 485-A:8 and NH Code of Administrative Rules Env-Wq 1700, for the support of designated uses identified in the standards.

## B. WATER QUALITY CERTIFICATION APPROVAL

Based on the findings and conditions noted below, the New Hampshire Department of Environmental Services (DES) has determined that construction and operation of the Activity will not violate surface water quality standards, or cause additional degradation in surface waters not presently meeting water quality standards. DES hereby issues this WQC subject to the conditions in Section E. of this certification.

## C. STATEMENT OF FACTS AND LAW

- C-1 Section 401 of the United States Clean Water Act (CWA, 33 U.S.C. 1341) states, in part: "Any applicant for a federal license or permit to conduct any activity including, but not limited to, the construction or operation of facilities, which may result in any discharge into the navigable waters, shall provide the licensing or permitting agency a certification from the State in which the discharge originates or will originate...that any such discharge will comply with the applicable provisions of sections 301, 302, 303, 306, and 307 of this title....No license or permit shall be granted until the certification required by this section has been obtained or has been waived...No license or permit shall be granted if certification has been denied by the State..."
- C-2 Section 401 further states, in part "Any certification provided under this section shall set forth any effluent limitations and other limitations, and monitoring requirements necessary to assure that any applicant for a Federal license or permit will comply with any applicable effluent limitations and other limitations...and shall become a condition on any Federal license or permit subject to the provisions of this section."
- C-3 RSA 485-A:12, III. No activity, including construction and operation of facilities, that requires certification under section 401 of the Clean Water Act and that may result in a discharge, as that term is applied under section 401 of the Clean Water Act, to surface waters of the state may commence unless the department certifies that any such discharge complies with the state surface water quality standards applicable to the classification for the receiving surface water body. The department shall provide its response to a request for certification to the federal agency or authority responsible for issuing the license, permit, or registration that requires the certification under section 401 of the Clean Water Act. Certification shall include any conditions on, modifications to, or monitoring of the proposed activity necessary to provide assurance that the proposed discharge complies with applicable surface water quality

standards. The department may enforce compliance with any such conditions, modifications, or monitoring requirements as provided in RSA 485-A:22.

- C-4 RSA 485-A: 12, IV. No activity that involves surface water withdrawal or diversion of surface water that requires registration under RSA 488:3, that does not otherwise require the certification required under RSA 485-A: 12, III, and which was not in active operation as of the effective date of this paragraph, may commence unless the department certifies that the surface water withdrawal or diversion of surface water complies with state surface water quality standards applicable to the classification for the surface water body. The certification shall include any conditions on, modifications to, or monitoring of the proposed activity necessary to provide reasonable assurance that the proposed activity complies with applicable surface water quality standards. The department may enforce compliance with any such conditions, modifications, or monitoring requirements as provided in RSA 485-A: 22.
- C-5 RSA 488:3 Registration Required. –
- I. No person shall withdraw or discharge a cumulative amount of more than 20,000 gallons of water per day, averaged over any 7-day period, or more than 600,000 gallons of water over any 30-day period, at a single real property or place of business without registering the withdrawal or discharge with the department. Transfers of such volume of water shall also be registered. Registration shall be in addition to any required permits.
- II. No registration shall be transferred to another person without written notification to the commissioner.
- C-6 Env-Wq 1702.46 "Surface waters" means "surface waters of the state" as defined in RSA 485-A:2, XIV and waters of the United States as defined in 40 CFR 122.2.
- C-7 Env-Wq 1703.01 Water Use Classifications.
- (a) State surface waters shall be divided into class A and class B, pursuant to RSA 485-A:8, I, II and III. Each class shall identify the most sensitive use which it is intended to protect.
- (b) All surface waters shall be restored to meet the water quality criteria for their designated classification including existing and designated uses, and to maintain the chemical, physical, and biological integrity of surface waters.
- (c) All surface waters shall provide, wherever attainable, for the protection and propagation of fish, shellfish and wildlife, and for recreation in and on the surface waters.

(d) Unless the flows are caused by naturally occurring conditions, surface water quantity shall be maintained at levels adequate to protect existing and designated uses.

C-8 Env-Wq 1703.19 Biological and Aquatic Community Integrity.

(a) The surface waters shall support and maintain a balanced, integrated, and adaptive community of organisms having a species composition, diversity, and functional organization comparable to that of similar natural habitats of a region. (b) Differences from naturally occurring conditions shall be limited to non-detrimental differences in community structure and function.

C-9 In 2010, DES published guidance (hereinafter called the 2010 instream flow guidance or 2010 ISF guidance) for estimating instream flow requirements for the protection of aquatic life for situations. The guidance is available at:

<http://des.nh.gov/organization/commissioner/pip/publications/wd/documents/wd-11-3.pdf>

C-10 Pursuant to Section 23(b)(1) of the Federal Power Act (FPA), §817(1), a non-federal hydroelectric project must (unless it has a still-valid pre-1920 federal permit) be licensed if it: (1) is located on a navigable water of the United States; (2) occupies lands of the United States; (3) utilizes surplus water or water power from a government dam; or (4) is located on a stream over which Congress has Commerce Clause jurisdiction, is constructed or modified on or after August 26, 1935, and affects the interests of interstate or foreign commerce.

C-11 The Applicant is responsible for the Activity, including construction and operation.

C-12 On November 8, 2012, the Applicant submitted an application and associated supplemental information for Water Quality Certification to DES. The Applicant has also registered the proposed withdrawal with DES as required by RSA 488:3.

#### D. FINDINGS

- D-1 The Activity reviewed for this Water Quality Certification includes the plans and information submitted with the Water Quality Certification application and, in general, includes the construction and operation of the following:
- a. The Activity is proposed to include a temporary withdrawal water pipe with a screen located in a suitable location within the brook at elevation 1300' to collect between 0.06 and 0.22 cubic feet per second (cfs) (equivalent to 25-100 gallons per minute) of flow. The coordinates of the inlet point are 43° 50' 07.70" N, 71° 51' 39.80" W. The inlet piping will be routed approximately 50 feet away from the brook into a small pre-cast concrete tank. A penstock will exit the settling tank and run parallel to the brook along a logging road approximately 1100 feet to a power house at elevation 1060 feet where a multi-nozzle hydro turbine will be used to generate power for residential use during three seasons of the year. In the fall, winter, and spring up to 0.11, 0.06, and 0.22 cfs, respectively, will be passed through the turbine. The turbine will not be operated during the summer. After flowing through the power house the flow would be returned to the brook at elevation 1045 feet. There will be no dam or impoundment created for the Activity.
  - b. The Activity proposes to use approximately 50% of the streamflow, which was estimated by the Applicant to be 0.45 cfs.
- D-2 The Activity would affect streamflow in the bypass reach of the unnamed brook. The bypass reach would extend 1110 feet from the intake point to the proposed discharge point below the turbine. The coordinates of the discharge point are 43° 50' 08.91" N, 71° 51' 55.17" W. The unnamed brook flows from National Forest Land to the eastern edge of the Applicant's property, flows through the Applicant's property, under Buffalo Road, and then flows into the Baker River.
- D-3 Named and unnamed, streams, rivers, lakes, ponds and wetlands, potentially affected by any Activity, are surface waters under Env-Wq 1702.46. DES has assigned Assessment Unit (AU) identification numbers to surface waters that appear on 1:24,000 scale hydrography. Consequently, not all surface waters currently have an AU number. Surface waters that do not have an AU number are still considered surface waters of the State in accordance with Env-

Wq 1702.46. Surface waters that could be potentially affected by this Activity and their associated AU numbers (where available) include the following:

Surface Water Name and AU Numbers	Class	Description
Unnamed Brook NHRIV700010305-19	B	River reach extending approximately 8288 ft (1.5 miles) from Willoughby Mountain in the White Mountain National Forest to the Baker River

D-4 According to the 2010 list of impaired waters, the following surface waters in the vicinity of the proposed Activity which have assigned AU numbers are listed as impaired. All impairments, with the exception of those highlighted in bold (which have approved TMDLs), are on the Section 303(d) List. With the exception of mercury, for which there is a state-wide fish consumption advisory, there are no data available for the assessment unit.

Assessment Unit (AU)	Water body Name	Cause of Impairment (Designated Use Impaired)
Unnamed Brook NHRIV700010305-19	Unnamed Brook	<b>Mercury (FC)</b>
<p>Notes: AL = Aquatic Life, PCR = Primary Recreation, SCR = Secondary Recreation, FC = Fish Consumption, SFC = Shellfish Consumption</p> <p>Impairments highlighted in bold have approved TMDLs. All other impairments are on the Section 303(d) List.</p>		

D-5 The Activity may require exemption from Federal Energy Regulatory Commission (FERC) licensing. Should the Activity require a FERC Exemption, a Section 401 Water Quality Certification is required in accordance with RSA 485-A:12,III.

D-6 The Activity as proposed is not expected to have any wetland dredge or fill impacts. If the design of the Activity were to change to include wetland dredge and fill impacts in jurisdictional areas or a permanent structure in the brook, a DES Wetlands permit will be required.

D-7 The Activity requires water quality certification under NH RSA 485-A:12, IV. Diversion of up to 0.22 cfs (100 gallons per minute) is equivalent to 142,200 gallons per day, which is more than the minimum requirement for registration under RSA 488:3 (20,000 gallons of water per day, averaged over any 7-day period).

- D-8 The proposed Activity includes diversion of water from the unnamed brook through an intake pipe, holding tank, penstock, and turbine. This diversion of water will alter streamflow in the bypass reach. Streamflow is an important characteristic of habitat for the aquatic community. Therefore, the proposed diversion of water may cause the water quality criteria for biological and aquatic community integrity (Env-Wq 1703.19, item C-8) to be violated in the bypass reach.
- D-9 The water quality criteria for biological and aquatic community integrity (Env-Wq 1703.19) can be met for the bypass reach if sufficient flow is maintained in the bypass reach. Ideally, the streamflow in the bypass reach should mimic natural flows as much as possible as outlined in the 2010 ISF Guidance (see item C-9).
- D-10 The Applicant proposes to verify withdrawals in each season by taking periodic measurements with an ultrasonic flow meter.
- D-11 DES has determined that violations of the water quality criteria for biological and aquatic community integrity (Env-Wq 1703.19) should not occur if the Activity operates only in the fall, winter, and spring and leaves no less than the Aquatic Base Flow (0.1 cfs) and approximately 50% of inflow (as proposed by the Applicant) in the bypass reach. This finding is based on the following information.
- a. The Activity is in a very small watershed with low streamflow.
  - b. The watershed area draining to the Activity is 0.2 square miles.
  - c. The U.S. Geological Survey Low Flow Statistics tool predicts Q60 flows (streamflow that is exceeded more than 60% of the time) for the watershed of 0.12, 0.55, 0.02, and 0.24 cfs in winter, spring, summer, and fall, respectively.
  - d. DES staff visited the site on October 9, 2012 and measured flows in the brook between 0.07 and 0.18 cfs. These measured flows indicate that the predicted Q60 flows are reasonably accurate because they are consistent with the predicted Q60 for fall (0.24 cfs). DES staff did not find any locations where a stage-discharge relationship could be reliably developed.
  - e. The Aquatic Base Flow for a 0.2 square mile watershed is 0.1 cfs. Aquatic Base Flow is a standard setting method to estimate minimum flows for bypass reaches. For rivers where inadequate flow records exist or for rivers regulated by dams or upstream diversions, the recommended minimum flow is 0.5 cubic feet per

second per square mile of drainage (cfsm). Aquatic Base Flow is the simplest of the standard setting methods and is typically used for watersheds of 50 square miles or more. However, in the absence of site-specific flow studies, Aquatic Base Flow provides an approximation of the minimum flow needed in a bypass reach.

- f. The Applicant proposes to use no more than 50% of the streamflow for the Activity. The seasons during which the proposed withdrawal would be no greater than 50% of the Q60 streamflow would be fall, winter, and spring.

#### E. WATER QUALITY CERTIFICATION CONDITIONS

Unless otherwise authorized by DES, the following conditions shall apply.

- E-1. The Activity shall not cause or contribute to a violation of surface water quality standards. DES may modify this Water Quality Certification to include additional conditions to ensure the Activity complies with surface water quality standards should DES determine that surface water quality standards are being violated as a result of the Activity.
- E-2. The Applicant shall allow DES to inspect the Activity and its effects on affected surface waters at any time to monitor compliance with the conditions of this Water Quality Certification.
- E-3. The Applicant shall consult with DES regarding any proposed modifications to the Activity, including construction or operation, to determine whether this Water Quality Certification requires modification in the future.
- E-4. The Applicant shall comply with all other permits required for this Activity, including, but not limited to, any DES Wetlands permits and amendments.
- E-5. Transfer of this Certification to a new owner shall require notification to and approval by DES.
- E-6. The Activity shall operate only in the fall, winter, and spring, shall withdraw no more than 50% of the Q60 streamflow for each season, and shall leave no less than the Aquatic Base Flow (0.1 cfs) or inflow (whichever is less) in the bypass reach at all times. The maximum withdrawal for each season is shown in the following table.



Season	Dates	Maximum Withdrawal
Fall	November 1 – December 31	0.11 cfs (50 gpm*)
Winter	January 1 – March 15	0.06 cfs (25 gpm)
Spring	March 16 – June 30	0.22 cfs (100 gpm)
Summer	July 1 – October 31	0 cfs (0 gpm)

\*gpm = gallons per minute, cfs = cubic feet per second

These withdrawal limits may be modified by DES based on any new information including, but not limited to, new, site-specific flow data provided by the applicant with a modification request per Condition E-3.

- E-7. The intake pipe for the penstock shall be designed to allow a minimum of 0.1 cfs (or inflow if inflow is less than 0.1 cfs) to be passed in the brook at the point of withdrawal at all times. No withdrawals are allowed when inflow is less than or equal to 0.1 cfs in the brook. Prior to withdrawing any water from the brook the Applicant shall submit calculations and details to DES for review and approval demonstrating how compliance with the 0.1 cfs minimum streamflow requirement will be achieved.
- E-8. The intake pipe for the penstock and the return flow pipe shall be constructed from temporary piping that is inserted into the brook without any dredge or fill impacts to jurisdictional wetland areas, which include the bed and banks of the brook. The intake and return flow pipes shall not be permanently installed in the brook. The Applicant shall remove all portions of the intake and return flow pipes from the brook channel and any surrounding wetlands for the period July 1 through October 31 of each year.
- E-9. The intake and return flow pipes shall have screens so that fish will not become entrained in the system.
- E-10. The intake and return flow pipes shall not create impassable barriers to fish or other aquatic organisms in the brook.
- E-11. The intake and return flow pipes shall not significantly increase bank erosion in the brook.
- E-12. Prior to withdrawing any water from the brook, the Applicant shall submit photographs to DES of the installed intake and return flow pipes. The photographs should clearly show how the 0.1 cfs minimum bypass flow will be achieved.
- E-13. The Applicant shall keep records of the dates of operation, dates when the nozzles on the hydroturbine are changed, and dates when

the intake pipe is installed and removed from the brook for every year that the turbine is operated. The Applicant shall provide these records to DES upon request.

E-14. The Applicant shall comply with all reporting and other requirements of RSA 488:3.

E-15. The Applicant shall file a Declaration of Intention with FERC, using the boiler-plate application on the Commission's website at <http://www.ferc.gov/industries/hydropower/gen-info/comp-admin/jur-deter.asp>, in order to receive notification from FERC as to whether FERC has jurisdiction over the project. A copy of the Declaration of Intention filed with FERC shall be sent to DES prior to withdrawing any water from the brook. The Applicant shall submit a copy of the FERC decision to DES within 30 days of receiving the notification. If FERC has jurisdiction, this certification shall be considered a 401 Water Quality Certification in accordance with RSA 485-A:12, III and, if not already issued for public notice, shall be public noticed in accordance with Section 401 of the federal Clean Water Act. If this certification is considered a 401 Water Quality Certification, then Water Conservation requirements of Env-Wq 2101 shall also apply.

#### APPEAL

If you are aggrieved by this decision, you may appeal the decision to the Water Council. Any appeal must be filed within 30 days of the date of this decision, and must conform to the requirements of Env-Wq 200. Inquiries regarding appeal procedures should be directed to NHDES Council Appeals Clerk, 29 Hazen Drive, PO Box 95, Concord, NH 03302-0095; telephone (603) 271-6072.

If you have questions regarding this Certification, please contact Owen David at (603) 271-0699.



Harry T. Stewart  
Director, DES Water Division

cc: John Warner, US Fish and Wildlife Service  
Carol Henderson, NH Fish and Game  
Linda Whitcomb, Town Clerk Rumney NH  
Derek Bennett, DES Drinking Water and Ground Water Bureau  
Bob Easton, Federal Energy Regulatory Commission New England Branch