

# N Gorham Hydroelectric Project – Brookfield White Pine Hydro LLC (December 2015)

## LOW IMPACT HYDROPOWER INSTITUTE

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### LOW IMPACT HYDROPOWER QUESTIONNAIRE

#### CERTIFICATION OF LIHI NORTH GORHAM HYDROELECTRIC PROJECT NO. 2519

*[Excerpted from Appendix B of the Low Impact Hydropower Certification Handbook dated April 2014, available on-line <http://www.lowimpacthydro.org>.]*

<b>Background Information</b>	
1) Name of the Facility as used in the FERC license/exemption.	<b>North Gorham Hydroelectric Project</b>
2) Applicant's complete contact information (please use Appendix D, Project Contact Form)	<b>Kelly Maloney Manager, Licensing &amp; Compliance Brookfield White Pine Hydro LLC 150 Main Street Lewiston, ME 04240</b>
3) Location of Facility including (a) the state in which Facility is located; (b) the river on which Facility is located; (c) the river-mile location of the Facility dam; (d) the river's drainage area in square miles at the Facility intake; (e) the location of other dams on the same river upstream and downstream of the Facility; and (f) the exact latitude and longitude of the Facility dam.	<b>a.) Maine b.) Presumpscot River c.) 19.5 miles from head-of-tide at Smilt Hill Project d.) 444 mi<sup>2</sup> e.) Upstream – Eel Weir FERC No. 2984, Downstream – Dundee FERC No. 2942 f.) 43°48'09.00" N, 70°26'59.81"W Please see the attached map.</b>
4) Installed capacity.	<b>2.25 MW</b>
5) Average annual generation.	<b>10,403 MWh</b>

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6) Regulatory status.	<b>FERC No. 2519; issued 11/22/1993, expires 12/31/2034</b>
7) Reservoir volume and surface area measured at the normal maximum operating level.	<b>Gross Storage Capacity – 1,300 ac-ft Reservoir Surface Area – 98 acres</b>
8) Area occupied by non-reservoir facilities (e.g., dam, penstocks, powerhouse).	<b>Approximately 1.7 acres</b>
9) Number of acres inundated by the Facility.	<b>N/A</b>
10) Number of acres contained in a 200-foot zone extending around entire reservoir.	<b>Unavailable</b>
11) Contacts for Resource Agencies and non-governmental organizations	<b>See attached</b>
12) Description of the Facility, its mode of operation (i.e., peaking/run of river) and photographs, maps and diagrams.	<b>Please see attached Exhibit G and photos of the dam and associated project works.</b>
<p><b>Questions for “New” Facilities Only:</b> If the Facility you are applying for is “new” (i.e., an existing dam that added or increased power generation capacity after August of 1998) please answer the following questions to determine eligibility for the program.</p>	
13) When was the dam associated with the Facility completed?	
14) When did the added or increased generation first generate electricity? If the added or increased generation is not yet operational, please answer question 18 as well.	
15) Did the added or increased power generation capacity require or include any new dam or other diversion structure?	
16) Did the added or increased capacity include or require a change in water flow through the facility that worsened conditions for fish, wildlife, or water quality (for example, did operations change from run-of-river to peaking)?	

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<p>17 (a) Was the existing dam recommended for removal or decommissioning by resource agencies, or recommended for removal or decommissioning by a broad representation of interested persons and organizations in the local and/or regional community prior to the added or increased capacity?</p> <p>(b) If you answered “yes” to question 17(a), the Facility is not eligible for certification, unless you can show that the added or increased capacity resulted in specific measures to improve fish, wildlife, or water quality protection at the existing dam. If such measures were a result, please explain.</p>		
<p>18 (a) If the added or increased generation is not yet operational, has the increased or added generation received regulatory authorization (e.g., approval by the Federal Energy Regulatory Commission)? If not, the facility is not eligible for consideration; and</p> <p>(b) Are there any pending appeals or litigation regarding that authorization? If so, the facility is not eligible for consideration.</p>		
<p><b>A. Flows</b></p>	<p><b>PASS</b></p>	<p><b>FAIL</b></p>
<p>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?</p>	<p><b>YES = Pass, Go to B</b>  N/A = Go to A2  <b>See attached letter from the MDEP confirming that the facility is in compliance with the project minimum flow and impoundment limits.</b></p>	<p>NO = Fail</p>
<p>2) If there is no flow condition recommended by any Resource Agency for the Facility, or if the recommendation was issued prior to January 1, 1987, is the Facility in Compliance with a flow release schedule, both below the tailrace and in all bypassed reaches, that at a minimum meets Aquatic Base Flow standards or “good” habitat flow standards calculated using the Montana-Tennant method?</p>	<p>YES = Pass, go to B  NO = Go to A3</p>	

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<p>3) If the Facility is unable to meet the flow standards in A.2., has the Applicant demonstrated, and obtained a letter from the relevant Resource Agency confirming that demonstration, that the flow conditions at the Facility are appropriately protective of fish, wildlife, and water quality?</p>	<p>YES = Pass, go to B</p>	<p>NO = Fail</p>
<p><b>B. Water Quality</b></p>	<p><b>PASS</b></p>	<p><b>FAIL</b></p>
<p>1) Is the Facility either:</p> <p style="padding-left: 20px;">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</p> <p style="padding-left: 20px;">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?</p>	<p><b>YES</b> = Go to B2  <b>See attached letter from the MDEP confirming that the facility is in compliance with the existing water quality certification.</b></p>	<p>NO = Fail</p>
<p>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?</p>	<p>YES = Go to B3  <b>NO</b> = Pass  <b>The 2012 Integrated Water Quality Monitoring and Assessment Report (relevant section attached)</b>  <b>ME0106000103_608R Presumpscot R Main stem, above Dundee Dam, which includes project waters is a Class A waterway, Category 2 (Attaining Some Designated Uses with Insufficient Information For Others)</b></p>	

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3) If the answer to question B.2 is yes, has there been a determination that the Facility does not cause, or contribute to, the violation?	YES = Pass	NO = Fail
<b>C. Fish Passage and Protection</b>	<b>PASS</b>	<b>FAIL</b>
1) Are anadromous and/or catadromous fish present in the Facility area or are they know to have been present historically?	<b>YES</b> = Go to C2 <b>NO</b> = Go to C6 While the Presumption River supported anadromous runs of Atlantic salmon and shad before 1900, there are currently no plans to restore anadromous shad and river herring to project waters and no plans to restore Atlantic salmon to the Presumpscot River. Eel have been documented downstream of the Project.	

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<p>2) 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?</p>	<p><b>YES</b> = Go to C6 N/A = Go to C2 The Project is required to operate and maintain a downstream fish passage facility to enhance salmonid fisheries in the Presumpscot River. See attached FERC 1995 Order Approving the Fish Passage Facility O&amp;M Plan, the Condition Compliance acknowledging compliance with the water quality certification requirement for the installation and operation of downstream fish passage facilities. Please also see attached the 2015 Passage Report.</p>	<p>NO = Fail</p>
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<p>3) Are there historic records of anadromous and/or catadromous fish movement through the Facility area, but anadromous and/or catadromous fish do not presently move through the Facility area (e.g., because passage is blocked at a downstream dam or the fish no longer have a migratory run)?</p> <p>a) If the fish are extinct or extirpated from the Facility area or downstream reach, has the Applicant demonstrated that the extinction or extirpation was not due in whole or part to the Facility?</p> <p>b) If a Resource Agency Recommended adoption of upstream and/or downstream fish passage measures at a specific future date, or when a triggering event occurs (such as completion of passage through a downstream obstruction or the completion of a specified process), has the Facility owner/operator made a legally enforceable commitment to provide such passage?</p>	<p>YES = Go to C2a NO = Go to C3</p> <p>YES = Go to C2b N/A = Go to C2b</p> <p>YES = Go to C5 N/A = Go to C3</p>	<p>NO = Fail</p> <p>NO = Fail</p>
<p>4) If, since December 31, 1986:</p> <p>a) Resource Agencies have had the opportunity to issue, and considered issuing, a Mandatory Fish Passage Prescription for upstream and/or downstream passage of anadromous or catadromous fish (including delayed installation as described in C.3.a above), and</p> <p>b) The Resource Agencies declined to issue a Mandatory Fish Passage Prescription,</p> <p>c) Was a reason for the Resource Agencies' declining to issue a Mandatory Fish Passage Prescription one of the following: (1) the technological infeasibility of passage, (2) the absence of habitat upstream of the Facility due at least in part to inundation by the Facility impoundment, or (3) the anadromous or catadromous fish are no longer present in the Facility area and/or downstream reach due in whole or part to the presence of the Facility?</p>	<p>NO = Go to C6 N/A = Go to C4</p>	<p>YES = Fail</p>

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<p>5) If C4 was not applicable:</p> <p>a) Are upstream and downstream fish passage survival rates for anadromous and catadromous fish at the dam each documented at greater than 95% over 80% of the run using a generally accepted monitoring methodology? Or</p> <p>b) If the Facility is unable to meet the fish passage standards in 5.a, has the Applicant either i) demonstrated, and obtained a letter from the U.S. Fish and Wildlife Service or National Marine Fisheries Service confirming that demonstration, that the upstream and downstream fish passage measures (if any) at the Facility are appropriately protective of the fishery resource, or ii) committed to the provision of fish passage measures in the future and obtained a letter from the U.S. Fish and Wildlife Service or the National Marine Fisheries Service indicating that passage measures are not currently warranted?</p>	<p>YES = Go to C6</p>	<p>NO = Fail</p>
<p>6) Is the Facility in Compliance with Mandatory Fish Passage Prescriptions for upstream and/or downstream passage of Riverine fish?</p>	<p><b>YES</b> = Go to C7 N/A = Go to C7</p>	<p>NO = Fail</p>
<p>7) Is the Facility in Compliance with Resource Agency Recommendations for Riverine, anadromous and catadromous fish entrainment protection, such as tailrace barriers?</p>	<p>YES = Pass, go to D <b>N/A</b> = Pass, go to D</p>	<p>NO = Fail</p>
<p><b>D. Watershed Protection</b></p>	<p><b>PASS</b></p>	<p><b>FAIL</b></p>
<p>1) Is there a buffer zone dedicated for conservation purposes (to protect fish and wildlife habitat, water quality, aesthetics and/or low-impact recreation) extending 200 feet from the average annual high water line for at least 50% of the shoreline, including all of the undeveloped shoreline?</p>	<p>YES = Eligible for 3 extra years of certification; Go to D4</p>	<p><b>NO</b> = Go to D2</p>



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<p>2) Has the Facility owner/operator established an approved watershed enhancement fund that: 1) could achieve within the project's watershed the ecological and recreational equivalent of land protection in D.1, and 2) has the agreement of appropriate stakeholders and state and federal resource agencies?</p>	<p>YES = Eligible for 3 extra years of certification; Go to D4</p>	<p><b>NO</b> = Go to D3</p>
<p>3) Has the Facility owner/operator established through a settlement agreement with appropriate stakeholders, with state and federal resource agencies agreement, an appropriate shoreland buffer or equivalent watershed land protection plan for conservation purposes (to protect fish and wildlife habitat, water quality, aesthetics and/or low impact recreation)?</p>	<p>YES = Go to D4</p>	<p><b>NO</b> = Go to D4</p>
<p>4) Is the facility in compliance with both state and federal resource agencies recommendations in a license approved shoreland management plan regarding protection, mitigation or enhancement of shorelands surrounding the project?</p>	<p>YES = Pass, go to E <b>N/A</b> = Pass, go to E</p>	<p>No = Fail</p>
<p><b>E. Threatened and Endangered Species Protection</b></p>	<p><b>PASS</b></p>	<p><b>FAIL</b></p>
<p>1) Are threatened or endangered species listed under state or federal Endangered Species Acts present in the Facility area and/or downstream reach?</p>	<p><b>YES</b> = Go to E2 <b>NO</b> = Pass, go to F Northern longeared bat and Brook floater have been identified as having the potential to occupy the project vicinity. The Maine Natural Areas Program has identified no threatened or endangered botanical species occurring in the project vicinity. (See attached)</p>	

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<p>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?</p>	<p>YES = Go to E3  <b>N/A</b> = Go to E3</p>	<p>NO = Fail</p>
<p>3) If the Facility has received authorization 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 authorization pursuant to similar state procedures; is the Facility in Compliance with conditions pursuant to that authorization?</p>	<p>YES = Go to E4  <b>N/A</b> = Go to E5</p>	<p>NO = Fail</p>
<p>4) If a biological opinion applicable to the Facility for the threatened or endangered species has been issued, can the Applicant demonstrate that:</p> <p>a) The biological opinion was accompanied by a FERC license or exemption or a habitat conservation plan? Or</p> <p>b) The biological opinion was issued pursuant to or consistent with a recovery plan for the endangered or threatened species? Or</p> <p>c) There is no recovery plan for the threatened or endangered species under active development by the relevant Resource Agency? Or</p> <p>d) The recovery plan under active development will have no material effect on the Facility's operations?</p>	<p>YES = Pass, go to F</p>	<p>NO = Fail</p>

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<p>5) If E.2 and E.3 are not applicable, has the Applicant demonstrated that the Facility and Facility operations do not negatively affect listed species?</p>	<p><b>YES</b> = Pass, go to F                  The Project has limited lands for the occupation of terrestrial RTE species (see attached USFWS IPaC Trust Resources Report). Migratory birds identified as having the potential to occupy the project vicinity would be unaffected by run-of-river project operations, as would state listed Brook floater.</p>	<p>NO = Fail</p>
<p><b>F. Cultural Resource Protection</b></p>	<p><b>PASS</b></p>	<p><b>FAIL</b></p>
<p>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?</p>	<p><b>YES</b> = Pass, go to G                  N/A = Go to F2</p>	<p>NO = Fail</p>
<p>2) If not FERC-regulated, does the Facility owner/operator have in place (and is in Compliance with) a plan for the protection, mitigation or enhancement of impacts to Cultural Resources approved by the relevant state or federal agency or Native American Tribe, or a letter from a senior officer of the relevant agency or Tribe that no plan is needed because Cultural Resources are not negatively affected by the Facility?</p>	<p>YES = Pass, go to G</p>	<p>NO = Fail</p>

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<b>G. Recreation</b>	<b>PASS</b>	<b>FAIL</b>
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?	<b>YES</b> = Go to G3 N/A = Go to G2 Information pertaining to available recreation resources at the Project is reported to FERC as part of the FERC Form 80 process, the report for which is provided.	NO = Fail
2) If not FERC-regulated, does the Facility provide recreational access, accommodation (including recreational flow releases) and facilities, as Recommended by Resource Agencies or other agencies responsible for recreation?	YES = Go to G3	NO = Fail
3) Does the Facility allow access to the reservoir and downstream reaches without fees or charges?	<b>YES</b> = Pass, go to H	NO = Fail
<b>H. Facilities Recommended for Removal</b>	<b>PASS</b>	<b>FAIL</b>
1) Is there a Resource Agency Recommendation for removal of the dam associated with the Facility?	<b>NO</b> = Pass, Facility is Low Impact	YES = Fail

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### North Gorham Project Description

<b>FERC Number</b>	2519
<b>FERC License Expiration</b>	December 31, 2034
<b>River</b>	Presumpscot River
<b>Town</b>	Gorham, Windham, and Standish, Maine
<b>Drainage Area</b>	444 Sq. Miles
<b>Upstream Fish Passage Type</b>	None Required
<b>Downstream Fish Passage Type</b>	Downstream fish bypass facility via deep gate and plunge pool
<b>Installed Capacity</b>	2.25 MW
<b>Number of Units</b>	2
<b>Type of Units</b>	Horizontal Francis with double runners
<b>Dam Type</b>	Stone masonry and concrete
<b>FERC Dam Classification</b>	Low Hazard
<b>Dam Length</b>	970.5 Ft.
<b>Flashboard Height</b>	none
<b>Head</b>	34.4 ft
<b>Surface Area</b>	98 Acres

North Gorham Project works consist of the following:

1. a stone masonry and concrete dam about 1,009 ft long, having from west to east
  - a. a non-overflow masonry wall section about 600.5 feet long
  - b. an intake section about 51.5 ft long and 28 feet high with four gates 9.5 feet wide by 9.5 feet high, protected by trashracks with 1.25 inch clear spacing
  - c. a sluice gate section about 47 feet long with four submerged sliding gates 4 feet wide by 5 feet high
  - d. a spillway section about 256.5 feet long
  - e. a sluice section about 15.5 feet long
  - f. a cutoff wall section about 38 feet long
2. four 8 foot diameter steel penstocks extending approximately 50 – 70 feet downstream to two surge chambers
3. Two Surge chambers
4. A brick powerhouse about 58 feet wide and 71 feet long with two 1,460 hp turbines connected to two generating units each having 1,125 kw of generating capacity at a power factor of 0.75 kw/kVA

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