LOW IMPACT HYDROPOWER INSTITUTE
PO BOX 194
HARRINGTON PARK, NJ 07640
TEL. 865-719-4794
WWW.LOWIMPACTHYDRO.ORG

LOW IMPACT HYDROPOWER QUESTIONNAIRE

RECERTIFICATION OF LIHI ORONO A & B CERTIFICATE NO. 66

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

Background Information	
1) Name of the Facility as used in the FERC license/exemption.	**Orono Hydroelectric Project**
2) Applicant's complete contact information (please use Appendix D, Project Contact Form)	**Kelly Maloney** **Manager, Licensing & Compliance** **Black Bear Hydro Partners, LLC** **150 Main Street** **Lewiston, ME 04240**
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.	**a.) Maine** **b.) Stillwater Branch of the Penobscot River** **c.) 0.0 miles from the confluence of the Penobscot River** **d.) 7,602 mi^2** **e.) Upstream - Stillwater FERC No. 2712, Downstream – None** **f.) 44º53'01.80" N, 68º39'52.26"W**
4) Installed capacity.	**6.52 MW**
5) Average annual generation.	**50,800 MWh (Since addition of Powerhouse B)**

6) Regulatory status.	**FERC No. 2710; issued 12/8/2005, expires 3/31/2048**
7) Reservoir volume and surface area measured at the normal maximum operating level.	**Gross Storage Capacity – 1,405 ac-ft** **Reservoir Surface Area – 180 acres**
8) Area occupied by non-reservoir facilities (e.g., dam, penstocks, powerhouse).	**Approximately 1.5 acres**
9) Number of acres inundated by the Facility.	**N/A**
10) Number of acres contained in a 200-foot zone extending around entire reservoir.	**Approximately 180 acres**
11) Contacts for Resource Agencies and non-governmental organizations	**See attached**
12) Description of the Facility, its mode of operation (i.e., peaking/run of river) and photographs, maps and diagrams.	**See attached – background information and project specific data**
Questions for "New" Facilities Only: 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.	**The additional powerhouse at the Orono Hydroelectric Project (Powerhoues B) was completed in December 2013 to offset the generation lost at the Veazie, Great Works, and Howland Projects pursuant to the Lower Penobscot River Multiparty Settlement Agreement**
13) When was the dam associated with the Facility completed?	**1960**
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.	**December 2013**
15) Did the added or increased power generation capacity require or include any new dam or other diversion structure?	**No**
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)?	**No**
17 (a) Was the existing dam recommended for removal or decommissioning by	**No**

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? (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.		
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 (b) Are there any pending appeals or litigation regarding that authorization? If so, the facility is not eligible for consideration.	**N/A**	
A. Flows	**PASS**	**FAIL**
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 = Pass, Go to B** N/A = Go to A2	NO = Fail
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?	YES = Pass, go to B NO = Go to A3	
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	YES = Pass, go to B	NO = Fail

of fish, wildlife, and water quality?		
B. Water Quality	**PASS**	**FAIL**
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 = Go to B2**	NO = Fail
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 = Go to B3 **NO = Pass**	
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
C. Fish Passage and Protection	**PASS**	**FAIL**
1) Are anadromous and/or catadromous fish present in the Facility area or are they know to have been present historically?	**YES= Go to C2** NO = Go to C6	
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?	**YES = Go to C6** N/A = Go to C2	NO = Fail
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)?	YES = Go to C2a NO = Go to C3	

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? 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?	YES = Go to C2b N/A = Go to C2b YES = Go to C5 N/A = Go to C3	NO = Fail NO = Fail
4) If, since December 31, 1986: 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 b) The Resource Agencies declined to issue a Mandatory Fish Passage Prescription, 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?	NO = Go to C6 N/A = Go to C4	YES = Fail
5) If C4 was not applicable: 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	YES = Go to C6	NO = Fail

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?		
6) Is the Facility in Compliance with Mandatory Fish Passage Prescriptions for upstream and/or downstream passage of Riverine fish?	YES = Go to C7 **N/A = Go to C7**	NO = Fail
7) Is the Facility in Compliance with Resource Agency Recommendations for Riverine, anadromous and catadromous fish entrainment protection, such as tailrace barriers?	**YES = Pass, go to D** N/A = Pass, go to D	NO = Fail
D. Watershed Protection	**PASS**	**FAIL**
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?	YES = Eligible for 3 extra years of certification; Go to D4	**NO = Go to D2**
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?	YES = Eligible for 3 extra years of certification; Go to D4	**NO = Go to D3**
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	YES = Go to D4	**NO = Go to D4**

and/or low impact recreation)?		
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?	YES = Pass, go to E **N/A = Pass, go to E**	No = Fail
E. Threatened and Endangered Species Protection	**PASS**	**FAIL**
1) Are threatened or endangered species listed under state or federal Endangered Species Acts present in the Facility area and/or downstream reach?	**YES = Go to E2** NO = Pass, go to F	
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?	**YES = Go to E3** N/A = Go to E3	NO = Fail
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?	**YES = Go to E4** N/A = Go to E5	NO = Fail
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	**YES = Pass, go to F**	NO = Fail

development by the relevant Resource Agency? Or d) The recovery plan under active development will have no material effect on the Facility's operations?		
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?	YES = Pass, go to F	NO = Fail
F. Cultural Resource Protection	**PASS**	**FAIL**
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 = Pass, go to G** N/A = Go to F2	NO = Fail
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?	YES = Pass, go to G	NO = Fail
G. Recreation	**PASS**	**FAIL**
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 = Go to G3** N/A = Go to G2	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?	**YES = Pass, go to H**	NO = Fail

H. Facilities Recommended for Removal	**PASS**	**FAIL**
1) Is there a Resource Agency Recommendation for removal of the dam associated with the Facility?	**NO = Pass, Facility is Low Impact**	YES = Fail

The following provides additional information in support of the application for recertification of the Orono Hydroelectric Project as a low impact facility. In addition, the Lower Penobscot River Multiparty Settlement Agreement, the Orono Project FERC License, Water Quality Certificate, the National Marine Fisheries Service Endangered Species Act Biological Opinion, and the amendments to incorporate the relevant provisions of the Lower Penobscot River Multiparty Settlement Agreement are being provided separately.

A. Flows

The 2004 Lower Penobscot River Multiparty Settlement Agreement was incorporated into provided for the licensing for the Orono Hydroelectric Project by amendment, including the pertinent water level and flow management measures and contingent mitigation requirements outlined in Attachments A and B of the Agreement. In addition, the Project's license and Water Quality Certificate also include provisions for water level and flow management. Please see attached.

B. Water Quality

The Orono Hydroelectric Project received its Water Quality Certification from the Maine Department of Environmental Protection on 15 December 2004, and the Certification was amended 23 August 2011 to incorporate the change in normal full pond (6 inch increase) as a result of the construction of Orono B and pursuant to the provisions of the 2004 Lower Penobscot River Multiparty Settlement Agreement. Please see attached.

C. Fish Passage and Protection

The 2004 Lower Penobscot River Multiparty Settlement Agreement, incorporated into the Project license by amendment provided for fish passage and contingent mitigation requirements outlined in Attachments A and B of the Agreement. The license includes an article reserving FERC's authority to require the licensee to construct operate and maintain such fishways as may be prescribed by the Secretary of Interior or the Secretary of Commerce under Section 18 of the Federal Power Act. Under the 2004 Lower Lower Penobscot River Multiparty Settlement Agreement and the 2013 Order Amending License to Incorporate Terms and Conditions Under the Endangered Species Act requires the Licensee to consult with the fisheries agencies once every five years regarding the status of Atlantic salmon and project effects. Please see attached.

D. Watershed Protection

Since the FERC Project boundary for the Orono Hydroelectric Project primarily contains the land necessary for operation and maintenance of the

project facilities, state and federal resource agencies did not request a formal shoreland management plan. However, in addition to the standard FERC license requirements associated with erosion and sedimentation control the Project is subject to federal, state and local erosion and sedimentation control requirements.

E. Threatened and Endangered Species Protection

The Orono Hydroelectric Project received the National Marine Fisheries Service (NMFS) Biological Opinion issued 31 August 2012 under Section 7(a)(2) of the Endangered Species Act for federally-listed Atlantic salmon. The Biological Opinion recognizes that there were no upstream fish passage facilities for anadromous fish and required that Black Bear install a fish trap and handling facility at the Orono Project spillway as a means of evacuating the fish that are attracted to the spillage in the Orono bypass reach. In addition, and as a result of the construction of the Powerhouse B, a new downstream bypass facility has been installed to accommodate diadromous fish species. Please see attached.

F. Cultural Resource Protection

Cultural resource assessments during the licensing process did not reveal any specific issues associated with the Orono Project. However, the Project does have a Cultural Resource Management Plan which includes provisions to address cultural resource issues in the event they arise during the term of the license.

G. Recreation

The Orono Hydroelectric Project license and Water Quality Certificate contain recreation-related provisions for the project. Black Bear Hydro Partners, LLC has implemented the recreation plan in accordance with the license requirements. Please see attached.

Orono A & B Hydroelectric Project – Black Bear Hydro Partners, LLC (December 2015)

Orono Project Description

FERC Number	2710
FERC License Expiration	March 31, 2048
River	Stillwater Branch of Penobscot
Town	Orono
Drainage Area	7,602 Sq. Miles
Upstream Fish Passage Type	Upstream American Eel passage facilities installed at Orono A and to be installed at Orono B, Upstream fish trap/sort facility
Downstream Fish Passage Type	Two downstream fish bypass facilities with full depth 1-inch trashracks, downstream eel passage
Installed Capacity	6.52 MW
Number of Units	7; (4 in Orono A and 3 in Orono B)
Type of Units	4 Francis, 2 Vertical Propeller, 1 Kaplan
Dam Type	Concrete Gravity
FERC Dam Classification	Low Hazard
Dam Length	1,230 Ft.
Flashboard Height	3.0 ft
Head	25 ft. at Station
Surface Area	180 Acres

As licensed, project works consist of:

1) a 1,230-foot-long by 15-foot-high dam, originally reconstructed in 1960, that includes a 320-foot-long spillway consisting of the following sections (PPL, 2009):

    a. left abutment which is a concrete gravity structure approximately 168 feet long with an average height of approximately 20 feet and a top elevation of 80.1 feet NGVD;

    b. auxiliary spillway which is a concrete gravity structure, 297 feet long and approximately 13 feet high with a permanent crest at elevation 73.2 feet NGVD;

c. main spillway which is a concrete gravity structure 320 feet long and approximately 10 feet high (average) with a permanent crest at elevation 70.0 feet NGVD topped with 3-foot-high flashboards (at elevation 73.0 feet NGVD);

d. forebay wall, constructed of concrete, 79 feet long, integral with the upstream fishway structure with a top elevation of 78.3 feet NGVD;

e. an intake structure for Powerhouse B constructed of concrete, approximately 95 feet long and approximately 20 feet high with a top elevation of 78.3 feet NGVD and integral to the existing Powerhouse A intake via a singular trashrack measuring approximately 165 feet long by 20 feet high;

f. an intake structure for Powerhouse A constructed of concrete, 75 feet long and approximately 23 feet high with a top elevation of 82.9 feet NGVD; and

g. the right abutment constructed of concrete, 196 feet long and approximately 18 feet high with a top elevation of 77.9 feet NGVD (which has been backfilled).

Orono A

Orono B