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ENGINEERS

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June 8, 2023

U.S. Environmental Protection Agency, Region 1
ATTN: George Papadopoulos, HYDROGP Coordinator
5 Post Office Square – Mailcode 06-1
Boston, MA 02109-3912

Email: Hydro.GeneralPermit@epa.gov

Subject: Notice of Intent (NOI) Applications for Coverage under the EPA Region 1 Hydroelectric Generating Facilities General Permit (Hydro GP) for Facilities in New Hampshire

Dear Mr. Papadopoulos:

On behalf of the following FERC licensees, please see the attached NOI applications for the following facilities located along the Androscoggin River in New Hampshire:

Great Lakes Hydro America, LLC

- Cascade Hydro – NPDES Permit No. NHG360010
- Cross Hydro – NPDES Permit No. NHG360009
- Gorham Hydro – NPDES Permit No. NHG360011
- Riverside Hydro – NPDES Permit No. NHG0008
- Sawmill Hydro – NPDES Permit No. NHG360007
- Shelburne Hydro – NPDES Permit No. NHG0012

Errol Hydroelectric Company, LLC

- Errol Hydro – NPDES Permit No. NHG360016

Pontook Operating LP

- Pontook Hydro – NPDES Permit No. NHG36006

Per Section 6.7 of the 2023 Hydro GP, copies of these NOI applications were also provided to the New Hampshire Department of Environmental Services (NHDES).

Should questions arise or additional information be desired, please do not hesitate to contact me at 207.829.5016.

Sincerely,

SEVEE & MAHER ENGINEERS, INC.

Philip H. Gerhardt, P.E.
Principal/Senior Environmental Engineer

cc: Hayley Franz (Hayley.Franz@des.nh.gov), Theresa Ptak (Teresa.Ptak@des.nh.gov), NHDES

Request for General Permit Authorization to Discharge Wastewater Notice of Intent (NOI) to be covered by Hydroelectric Generating Facilities General Permit (HYDROGP) No. MAG360000 or NHG360000

Indicate Applicable General Permit for Discharge(s): ☐ MAG360000 ■ NHG360000

A. Facility Information

1. Facility Location	Name: Riverside Hydro	
	Street: 380 Main Street	
	City: Berlin	State: New Hampshire
	Zip: 03570	SIC Code: 4911
	Latitude: 44º 28' 21.91" N	Longitude: 71º 10' 30.96" W
	Type of Business: Hydroelectric Generating Facility	
2. Facility Mailing Address (if different from Location)	Street: 972 Main Street	
	City: Berlin	State: New Hampshire
	Zip: 03570	
3. Facility Owner	Name: Great Lakes Hydro America LLC	Email: Patrick.McDonough@brookfieldrenewable.com
	Street: 972 Main Street	Telephone: 207-376-7063

	City: Berlin	State: New Hampshire
	Contact Person: Patrick McDonough	Zip: 03570
4. Facility Operator (if different from above)	Name:	Email:
	Street:	Telephone:
	City:	State:
	Zip:	

5. Current Permit Status	Has prior HYDROGP coverage been granted for the discharge(s) listed in the NOI?		■ Yes ☐ No
	Permit number (if yes): NHG360008		
	Is the facility covered under an Individual Permit?		☐ Yes ■ No
	Is there a pending NPDES application of file with EPA for the discharge(s)?		☐ Yes ■ No
	Date of Submittal (if yes):	Permit Number (if known):	
	Attach a topographic map indicating the locations. of the facility and outfall(s) to the receiving water		■ Map Attached
	Number of turbines: 2		
	Combined turbine discharge (installed capacity) at:	Maximum capacity? 1,910 cfs Minimum capacity? 900 (estimated) cfs	
	Is this facility operated as a pump storage project?		☐ Yes ■ No

B. Discharge Information

1. Name of Receiving Water(s): Androscoggin River		■ Freshwater ☐ Marine
2. Waterbody classification: ☐ Class A ■ Class B ☐ Class SA ☐ Class SB		
3. Is the receiving water is listed in the State's Integrated List of Waters (i.e., CWA Section 303(d))?		■ Yes ☐ No
4. If the applicant answered yes to B.3, has the applicant identified the designated uses that are impaired, any pollutants indicated, and whether a final TMDL is available for any of the indicated pollutants in a separate attachment to the NOI?		■ Yes ☐ No
5. Attach a line drawing or flow schematic showing water flow through the facility including location of intake(s), operations contributing to effluent flow, treatment units, outfalls, and receiving water(s).		■ Line Drawing Attached
6. List each outfall (numbered sequentially) discharging effluent from the following categories and provide an estimate of the average monthly flow (in gallons per day) for each discharge type. See Parts 1.1 through 1.5 (for MA) or Parts 2.1 through 2.5 (for NH) for descriptions and permit conditions for each discharge type.		
Equipment-related cooling water	Outfalls: 20-A - This outfall discharges NCCW and water collected in the turbine sumps	70,000 gpd
Equipment and floor drain water	Outfalls:	gpd
Maintenance-related water	Outfalls: 20-B - This outfall is utilized during dewatered inspections only (every 3-5 years)	Intermittent gpd
Facility maintenance-related water during flood/high water events	Outfalls:	gpd
Equipment-related backwash strainer water	Outfalls:	gpd

7. For each outfall listed above, provide the following information (attach additional sheets if necessary). Outfalls may be eligible for alternative pH effluent limits. See Parts 1.7.l. and 2.7.l of the permit for additional information. Contact MassDEP or NHDES to determine the required information and protocol to request alternative pH effluent limits.		
Outfall No. 20-A	Latitude: 44º 28' 21.91" N	Longitude: 71º 10' 30.96" W
	Discharge is: ■ Continuous ☐ Intermittent ☐ Seasonal	
	Maximum Daily Flow 0.07 MGD	Average Monthly Flow 0.07 MGD
	Maximum Daily Temperature 50.1 °F	Average Monthly Temperature 44.9 °F
	Maximum Daily Oil & Grease <5 mg/L	Average Monthly Oil & Grease <5 mg/L
	Maximum Monthly pH 6.70 s.u.	Minimum Monthly pH 6.67 s.u.
	Alternative pH limits requested? ■Yes ☐ No	State approval attached? ■ Yes ☐ No
Outfall No. 20-B	Latitude: 44º 28' 21.91" N	Longitude: 71º 10' 30.96" W
	Discharge is: ☐ Continuous ■ Intermittent ☐ Seasonal	
	Maximum Daily Flow Intermittent MGD	Average Monthly Flow Intermittent MGD
	Maximum Daily Temperature N/A °F	Average Monthly Temperature N/A °F
	Maximum Daily Oil & Grease N/A mg/L	Average Monthly Oil & Grease N/A mg/L
	Maximum Monthly pH N/A s.u.	Minimum Monthly pH N/A s.u.
	Alternative pH limits requested? ■Yes ☐ No	State approval attached? ■ Yes ☐ No

Outfall No.	Latitude:	Longitude:
	Discharge is: ☐ Continuous ☐ Intermittent ☐ Seasonal	
	Maximum Daily Flow MGD	Average Monthly Flow MGD
	Maximum Daily Temperature °F	Average Monthly Temperature °F
	Maximum Daily Oil & Grease mg/L	Average Monthly Oil & Grease mg/L
	Maximum Monthly pH s.u.	Minimum Monthly pH s.u.
	Alternative pH limits requested? ☐Yes ☐ No	State approval attached? ☐ Yes ☐ No

C. Best Technology Available for Cooling Water Intake Structures

Facilities that checked "equipment-related cooling" as one of the discharges in Part B. of this NOI are subject to the following requirements.

1. Does the facility intake water for cooling purposes subject to the BTA Requirements at Part 4 of the HYDROGP?

■ Yes ☐ No
If no, skip to Part D of this NOI.

Please see the attached documentation describing Option 4

2. If yes, indicate which technology employed to comply with the general BTA requirements at Part 4.2.b of the HYDROGP:

☐An existing technology (e.g., a physical or behavioral barrier, spillway, or guidance device) that directs fish towards a downstream passage that minimizes exposure to the CWIS. Has the applicant attached a narrative description of the barrier to demonstrate that the downstream fish passage effectively transports live fish in a manner that minimizes the likelihood of becoming impinged or entrained at the cooling water intake?

☐ Yes ☐ No

☐An effective intake velocity at the point of cooling water withdrawal, or alternatively, at the point where cooling water enters the penstock (for intakes located within the penstock), not to exceed 0.5 fps. Has the applicant attached a demonstration of compliance with this intake velocity through observation of live fish in the intake or calculation based on the maximum intake volume and minimum bypass flow? ☐ Yes ☐ No

☐For cooling water withdrawn directly from the source waterbody (*i.e.*, not from within the penstock), a physical screen or other barrier technology with a mesh size no greater than ½-inch that minimizes the potential for adult and juvenile fish to become entrapped in the CWIS.

Has the applicant attached a description of the technology? ☐ Yes ☐ No

If the mesh size of the screen is greater than ½-inch has the applicant demonstrated that the calculated intake velocity is less than 0.5 fps based on the screen dimensions, maximum intake volume, and source water 7Q10 low flow? ☐ Yes ☐ No

3. If the answer to question C.1 is yes, in addition to complying with one of the criteria above, the applicant must submit the following information:

Maximum daily volume of cooling water withdrawn during previous five (5) years: 70,000 gpd

Maximum monthly average volume of cooling water withdrawn during the previous five (5) years: 70,000 gpd

Maximum daily and average monthly volume of water used exclusively for cooling: Max: 70,000 gpd Avg: 70,000 gpd

Maximum daily and average monthly volume of water used for another process before or after being used for cooling: Max: 0 gpd Avg: 0 gpd

Has the applicant attached a narrative description explaining how cooling water is reused? ☐ Yes ■ No

Volume of total intake water withdrawn and used in facility as a percentage of:

Installed turbine capacity 0.006 % Average daily flow through penstock 0.009 % - 0.007 %

Minimum flow through penstock 0.012 %

These values are based on a range of 60% - 80% of installed turbine capacity

Source water annual mean flow (*e.g.*, available from USGS, MassDEP, or NHDES): 1925 cfs

Source water 7-day mean low flow with 10-year recurrence interval (7Q10): 758 cfs

Volume of total intake water withdrawn and used in facility as a percentage of:

Source water mean annual flow 0.006% or 0.12 cfs

Source water 7Q10 flow 0.014% or 0.11 cfs

D. Chemical Additives

1. Does the facility use or plan to use non-toxic chemicals for pH adjustment?	☐ Yes ■ No
2. Does the facility use or plan to use chemicals for anti-freeze purposes?	☐ Yes ■ No
3. If the answer to D.2 is yes, provide the following for **EACH** chemical additive used for anti-freeze:	
Chemical Name and Manufacturer:	
Maximum Dosage Concentration Used:	Average Dosage Concentration Used:
Maximum Concentration in Discharge: mg/L	Average Concentration in Discharge: mg/L
Material Safety Data Sheet (MSDS) or other toxicity documentation for each chemical attached? ☐ Yes ☐ No	

E. Endangered Species Act Certification

Appendix 2 to the HYDROGP explains the certification requirements related to threatened and endangered species and designated critical habitat. Indicate under which criteria the discharge is eligible for coverage under the HYDROGP:	
1. ESA eligibility for species under jurisdiction of USFWS	☐ **Criterion A**: No endangered or threatened species or critical habitat are in proximity to the discharges or related activities or come in contact with the "action area." See Appendix 2, Part B for documentation requirements. Documentation attached? ☐ Yes ☐ No
	■ **Criterion B**: Formal or informal consultation with the USFWS under Section 7 of the ESA resulted in either a no jeopardy opinion (formal consultation) or a written concurrence by USFWS on a finding that the discharges and related activities are "not likely to adversely affect" listed species or critical habitat. Has the operator completed consultation with USFWS and attached documentation? ☐ Yes ■ No If no, is consultation underway? ■ Yes ☐ No
	☐ **Criterion C**: Using the best scientific and commercial data available, the effect of the discharges and related activities on listed species and designated critical habitat have been evaluated. Based on those evaluations, a determination is made by EPA, or by the operator and affirmed by EPA, that the

		discharges and related activities will have "no effect" on any federally threatened or endangered species or designated critical habitat under the jurisdiction of the USFWS. Has the applicant attached documentation of the "no effect" finding? ☐ Yes ☐ No
2.	ESA eligibility for species under jurisdiction of NMFS	Is the facility located on: the Connecticut River between the Massachusetts/Connecticut state line and Turners Falls, MA; the Taunton River; the Merrimack River between Lawrence, MA and the Atlantic Ocean; the Piscataqua River including the Salmon Falls and Cocheco Rivers; or a marine water? ☐ Yes ■ No
		If yes, was the applicant authorized to discharge from the facility under the 2009 HYDROGP? ☐ Yes ☐ No
		If the discharge is to one of the named rivers above or to a marine water *and* the facility was not previously covered under the 2009 HYDROGP, has there been any previous formal or informal consultation with NMFS? ☐ Yes ☐ No Documentation of consultation attached? ☐ Yes ☐ No

F. National Historic Properties Act Eligibility

1. Indicate under which criterion the discharge(s) is eligible for covered under the HYDROGP:
☐ **Criterion A**: No historic properties are present.
■ **Criterion B**: Historic properties are present. The discharges and related activities do not have the potential to impact historic properties.
☐ **Criterion C**: Historic properties are present. The discharges and related activities have the potential to impact or adversely impact historic properties.
2. Has the applicant attached supporting documentation for NHPA eligibility described in Appendix 3, Part C of the HYDROGP? ■ Yes ☐ No

3.	Does supporting documentation include a written agreement from the State Historic Preservation Officer, Tribal Historic Preservation Officer, or other tribal representative that outlines measures the operation will carry out to mitigate or prevent any adverse effects on historic properties? ☐ Yes ■ No

G. Supplemental Information

Please provide any supplemental information, including antidegradation review information applicable to new or increased discharges. Attach any certifications required by the HYDROGP. Supplemental information attached? ■ Yes ☐ No

H. Signature Requirements

1.	The NOI must be signed by the operator in accordance with the signatory requirements of 40 C.F.R. § 122.22, including the following certification:	
	I certify under penalty of law that no chemical additives are used in the discharges to be authorized under this General Permit except for those used for pH adjustment or anti-freeze purposes and that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those directly responsible for gathering the information, I certify that the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I certify that I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.	
2.	Notification provided to the appropriate State, including a copy of this NOI, if required?	■ Yes ☐ No
Signature:	Stephen Michaud (50794) Digitally signed by Stephen Michaud (50794) Date: 2023.06.08 10:06:03 -04'00'	Date:
Print Name and Title:	Steve Michaud, Director of Operations	

NOI ATTACHMENT 1

SITE AND FACILITY LOCATION MAPS

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SITE LOCATION MAP
RIVERSIDE HYDRO
380 MAIN STREET
BERLIN, NEW HAMPSHIRE

SME
SEVEE & MAHER
ENGINEERS

DWG: RIVERSIDE LMN: LMN CTB: SME-STD REV: 5/5/2023

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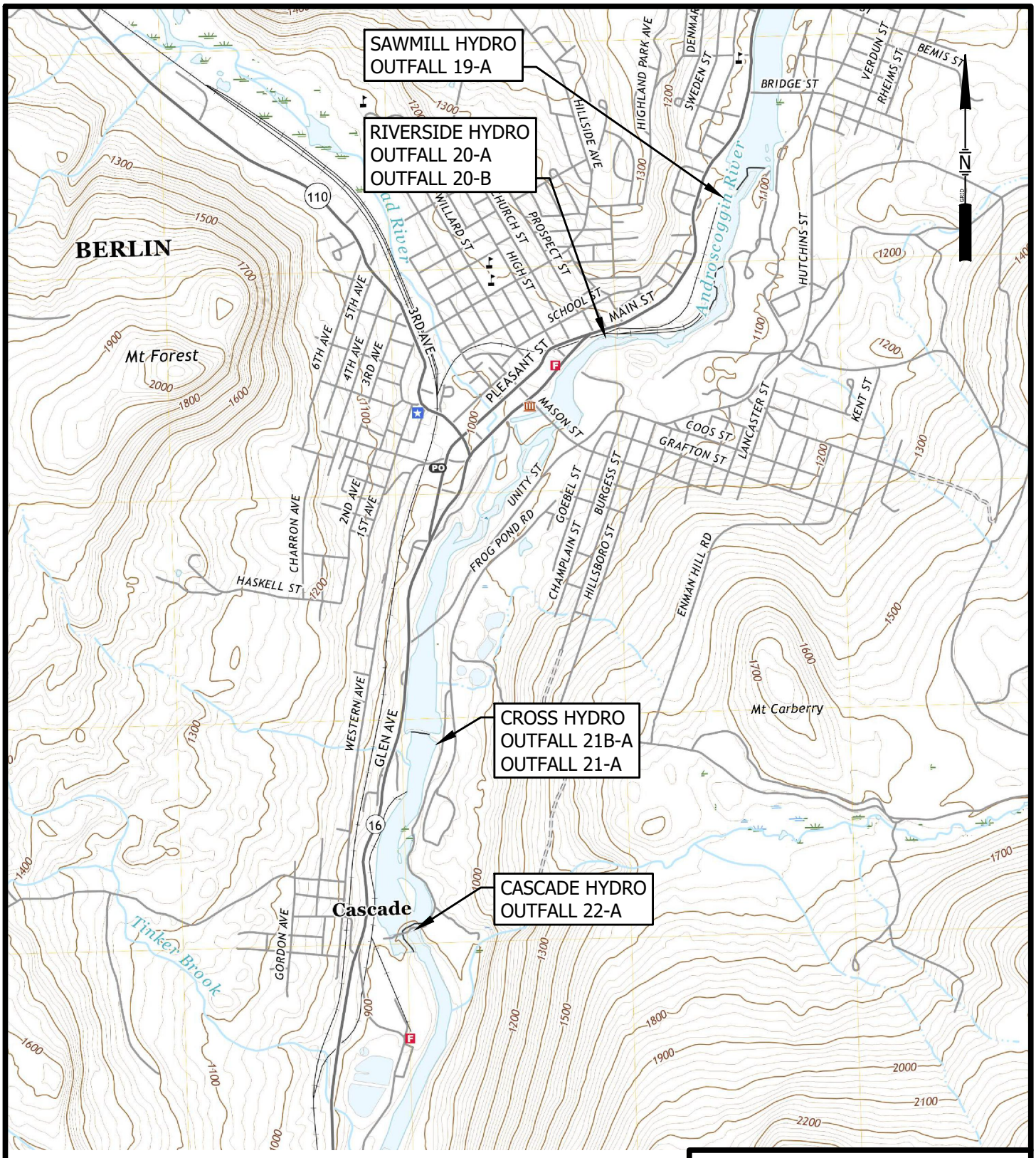

BASEMAP ADAPTED FROM 7.5 MIN USGS TOPO QUADS
BERLIN, NH - 2021

1000 0 2000 FEET

DWG: FACILITY LOC LMN: LMN CTB: SME-STD REV: 5/19/2023

BROOKFIELD FACILITY LOCATIONS
BERLIN, NEW HAMPSHIRE

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NOI ATTACHMENT 2

SITE DIAGRAMS

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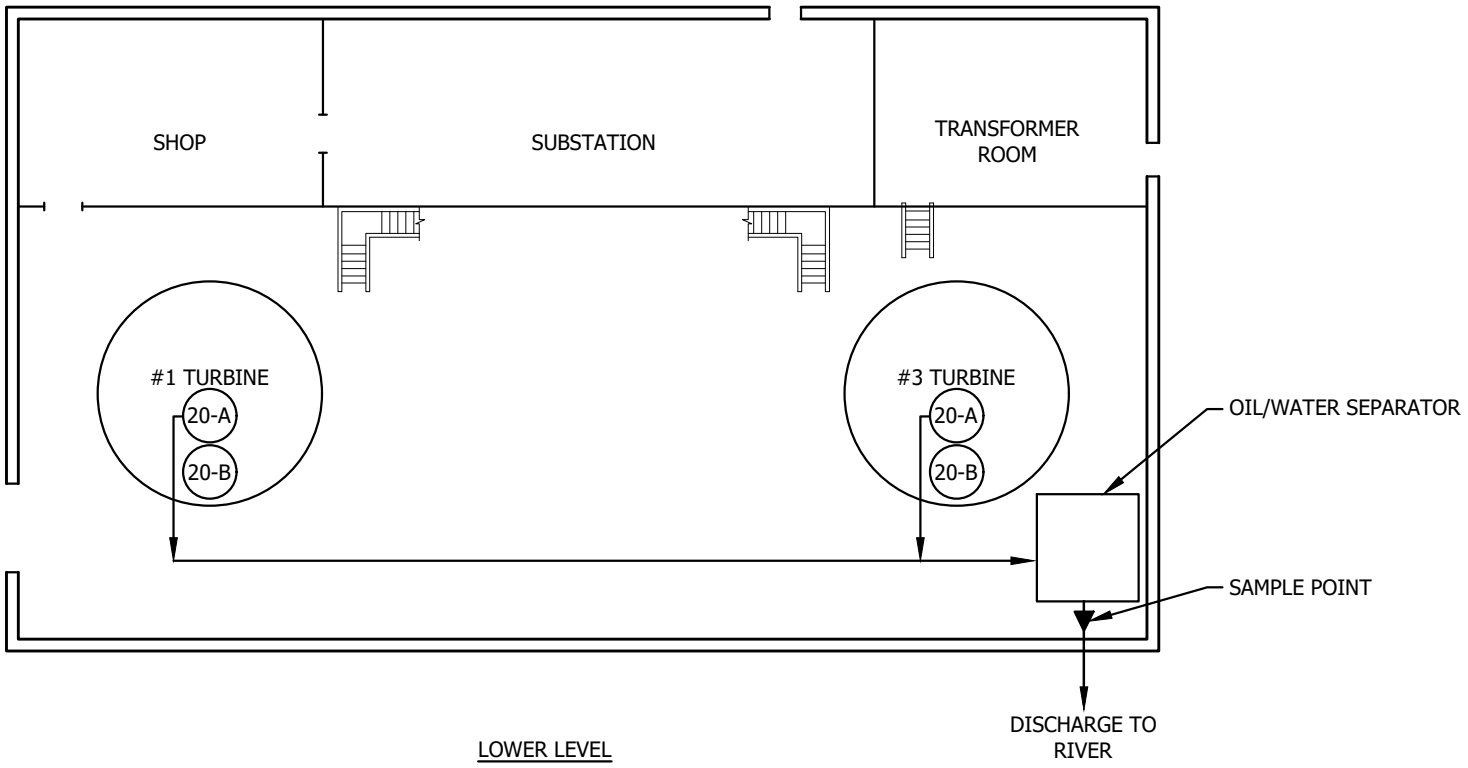

LOWER LEVEL

NOT TO SCALE

NOTE:

NON CONTACT COOLING WATER PASSES THROUGH TURBINE BEARINGS THEN DRAINS INTO TURBINE SUMPS. NON CONTACT COOLING WATER AND SUMP WATER PASSES THROUGH OIL/WATER SEPARATOR BEFORE BEING DISCHARGED FROM THE FACILITY.

LEGEND

20-A	NON CONTACT COOLING WATER AND SUMP PUMP
20-B	PIT DRAIN

WATER FLOW DIAGRAM
RIVERSIDE HYDRO
380 MAIN STREET
BERLIN, NEW HAMPSHIRE

SME
SEVEE & MAHER ENGINEERS

DWG: RIVERSIDE LMN: LMN CTB: SME-STD REV: 5/22/2023

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NOI ATTACHMENT 3

NEW HAMPSHIRE INTEGRATED LIST OF WATERS AND IMPAIRMENTS

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Watershed 305(b) Assessment Summary Report:

Assessment Cycle: 2020/2022

HUC 12: 010400010605

HUC 12 Name: Milan Tributaries

(Locator map on next page only applies to this HUC12)

Good	Meets water quality standards/thresholds by a relatively large margin.
Marginal	Meets water quality standards/thresholds but only marginally.
Likely Good	Limited data available, however, the data that is available suggests that the parameter is Potentially Attaining Standards (PAS).
No Current Data	Insufficient information to make an assessment decision.
Likely Bad	Limited data available, however, the data that is available suggests that the parameter is Potentially Not Supporting (PNS) water quality standards.
Poor	Not meeting water quality standards/thresholds. The impairment is marginal.
Severe	Not meeting water quality standards/thresholds. The impairment is more severe and causes poor water quality.

Assessment Unit ID	Map Label	Assessment Unit Name	Aquatic Life	Fish Consump.	Swimming	Boating
NHIMP400010605-01	I*01	Androscoggin River - D. C. Power Dam		4A-M	4B-M	3-ND
NHIMP400010605-02	I*02	Androscoggin River - Riverside Dam	3-ND	4A-M	4B-M	3-ND
NHIMP400010605-03	I*03	Androscoggin River - Smith Dam	3-ND	4A-M	4B-M	3-ND
NHIMP400010605-04	I*04	Berlin Reservoir	3-ND	4A-M	3-ND	3-ND
NHLAK400010605-01	L*01	Unnamed Pond	3-ND	4A-M	3-ND	3-ND
NHRIV400010605-01	R*01	Leavitt Stream - Unnamed Brook	3-ND	4A-M	3-ND	3-ND
NHRIV400010605-02	R*02	Androscoggin River	5-M	4A-M	3-ND	3-ND
NHRIV400010605-03	R*03	Androscoggin River	3-ND	4A-M	3-ND	3-ND
NHRIV400010605-04	R*04	North Branch Horne Brook - Unnamed Brook	3-ND	4A-M	3-ND	3-ND
NHRIV400010605-05	R*05	South Branch Horne Brook - Unnamed Brook	3-ND	4A-M	3-ND	3-ND
NHRIV400010605-06	R*06	Horne Brook - Red Brook	3-ND	4A-M	3-ND	3-ND
NHRIV400010605-07	R*07	Bean Brook - Unnamed Brook	3-ND	4A-M	3-ND	3-ND

NHRIV400010605-08	R*08	Bean Brook	3-ND	4A-M	3-ND	3-ND
NHRIV400010605-09	R*09	Androscoggin River	3-PAS	4A-M	3-ND	3-ND
NHRIV400010605-10	R*10	Androscoggin River	3-PAS	4A-M	4B-M	3-ND
NHRIV400010605-11	R*11	Androscoggin River	3-PAS	5-P	4B-M	3-ND
NHRIV400010605-12	R*12	Unnamed Brook	3-ND	4A-M	3-ND	3-ND
NHRIV400010605-13	R*13	Unnamed Brook	3-ND	4A-M	3-ND	3-ND
NHRIV400010605-14	R*14	Unnamed Brook	3-ND	4A-M	3-ND	3-ND
NHRIV400010605-15	R*15	Unnamed Brook	3-ND	4A-M	3-ND	3-ND
NHRIV400010605-16	R*16	Unnamed Brook	3-ND	4A-M	3-ND	3-ND
NHRIV400010605-17	R*17	Unnamed Brook	3-ND	4A-M	3-ND	3-ND
NHRIV400010605-18	R*18	Unnamed Brook	3-ND	4A-M	3-ND	3-ND
NHRIV400010605-19	R*19	Unnamed Brook	3-ND	4A-M	3-ND	3-ND
NHRIV400010605-20	R*20	Unnamed Brook	3-ND	4A-M	3-ND	3-ND
NHRIV400010605-21	R*21	Unnamed Brook	3-ND	4A-M	3-ND	3-ND
NHRIV400010605-22	R*22	Unnamed Brook	3-ND	4A-M	3-ND	3-ND
NHRIV400010605-23	R*23	Unnamed Brook	3-ND	4A-M	3-ND	3-ND
NHRIV400010605-24	R*24	Unnamed Brook	3-ND	4A-M	3-ND	3-ND
NHRIV400010605-25	R*25	Unnamed Brook	3-ND	4A-M	3-ND	3-ND
NHRIV400010605-26	R*26	Unnamed Brook	3-ND	4A-M	3-ND	3-ND
NHRIV400010605-27	R*27	Unnamed Brook	3-ND	4A-M	3-ND	3-ND
NHRIV400010605-28	R*28	Unnamed Brook	3-ND	4A-M	3-ND	3-ND

Assessment Unit ID: NHIMP400010605-02
Assessment Unit Name: Androscoggin River - Riverside Dam
Town(s) Primary Town is Listed First: Berlin

Size: 7 ACRES
Assessment Unit Category: 4B-M
Beach: N

2020/2022, 305(b)/303(d) - All Reviewed Parameters by Assessment Unit

Designated Use Description	Desig. Use Category	Parameter Name	Parameter Threatened (Y/N)	Last Sample	Last Exceed	Parameter Category	TMDL Priority
Aquatic Life Integrity	3-ND	Chlorophyll-a	N	N/A	NLV	3-ND	
		Dissolved oxygen saturation	N			3-ND	
		Oxygen, Dissolved	N			3-ND	
		pH	N			3-ND	
Fish Consumption	4A-M	Dioxin (including 2,3,7,8-TCDD)	N			4B-M	
		Dioxin (including 2,3,7,8-TCDD)	N			4B-M	
		MERCURY - FISH CONSUMPTION ADVISORY	N			4A-M	
Potential Drinking Water Supply	2-G						
Primary Contact Recreation	4B-M	Escherichia coli	N		SSO	4B-M	
Secondary Contact Recreation	3-ND	Escherichia coli	N			3-ND	
Wildlife	3-ND						

Good	Marginal	Likely Good	No Current Data	Likely Bad	Poor	Severe
Meets water quality standards/thresholds by a relatively large margin.	Meets water quality standards/thresholds but only marginally.	Limited data available. The data that is available suggests that the parameter is Potentially Attaining Standards (PAS)	Insufficient information to make an assessment decision.	Limited data available The data that is available suggests that the parameter is Potentially Not Supporting (PNS) water quality standards.	Not meeting water quality standards/thresholds. The impairment is marginal.	Not meeting water quality standards/thresholds The impairment is more severe and causes poor water quality.

Assessment Unit ID: NHIMP400010605-03
Assessment Unit Name: Androscoggin River - Smith Dam
Town(s) Primary Town is Listed First: Berlin

Size: 8 ACRES
Assessment Unit Category: 4B-M
Beach: N

2020/2022, 305(b)/303(d) - All Reviewed Parameters by Assessment Unit

Designated Use Description	Desig. Use Category	Parameter Name	Parameter Threatened (Y/N)	Last Sample	Last Exceed	Parameter Category	TMDL Priority
Aquatic Life Integrity	3-ND	ALKALINITY, CARBONATE AS CACO3	N	1990	1990	3-ND	
		ALUMINUM	N	2005	2005	3-ND	
		AMMONIA (TOTAL)	N	1990	N/A	3-ND	
		ARSENIC	N	1990	N/A	3-ND	
		CADMIUM	N	1990	N/A	3-ND	
		CHLORIDE	N	1998	N/A	3-ND	
		COPPER	N	2005	2005	3-ND	
		Chlorophyll-a	N	1990	NLV	3-ND	
		DISSOLVED OXYGEN SATURATION	N	1998	N/A	3-ND	
		IRON	N	1990	N/A	3-ND	
		LEAD	N	2005	2005	3-ND	
		NICKEL	N	2005	1990	3-ND	
		OXYGEN, DISSOLVED	N	1998	N/A	3-ND	
		PH	N	1998	N/A	3-ND	
		SELENIUM	N	1990	N/A	3-ND	
		TURBIDITY	N	1990	N/A	3-ND	

Good	Marginal	Likely Good	No Current Data	Likely Bad	Poor	Severe
Meets water quality standards/thresholds by a relatively large margin.	Meets water quality standards/thresholds but only marginally.	Limited data available. The data that is available suggests that the parameter is Potentially Attaining Standards (PAS)	Insufficient information to make an assessment decision.	Limited data available The data that is available suggests that the parameter is Potentially Not Supporting (PNS) water quality standards.	Not meeting water quality standards/thresholds. The impairment is marginal.	Not meeting water quality standards/thresholds The impairment is more severe and causes poor water quality.

Aquatic Life Integrity	3-ND	ZINC	N	2005	2005	3-ND	
Fish Consumption	4A-M	ARSENIC	N	1990	N/A	3-ND	
		COPPER	N	2005	N/A	3-ND	
		Dioxin (including 2,3,7,8-TCDD)	N			4B-M	
		Dioxin (including 2,3,7,8-TCDD)	N			4B-M	
		MANGANESE	N	1990	N/A	3-ND	
		MERCURY - FISH CONSUMPTION ADVISORY	N			4A-M	
		NICKEL	N	2005	N/A	3-ND	
		SELENIUM	N	1990	N/A	3-ND	
		ZINC	N	2005	N/A	3-ND	
Potential Drinking Water Supply	2-G	ARSENIC	N	1990	N/A	3-ND	
		COPPER	N	2005	N/A	3-ND	
		ESCHERICHIA COLI	N	1998	1998	3-ND	
		FECAL COLIFORM	N	1990	1990	3-ND	
		IRON	N	1990	N/A	3-ND	
		MANGANESE	N	1990	N/A	3-ND	
		NICKEL	N	2005	N/A	3-ND	
		SELENIUM	N	1990	N/A	3-ND	
		SULFATES	N	1990	N/A	3-ND	
		ZINC	N	2005	N/A	3-ND	
Primary Contact Recreation	4B-M	CHLOROPHYLL-A	N	1990	N/A	3-ND	
		ESCHERICHIA COLI	N	1998	1990	4B-M	

Good	**Marginal**	**Likely Good**	**No Current Data**	**Likely Bad**	**Poor**	**Severe**
Meets water quality standards/thresholds by a relatively large margin.	Meets water quality standards/thresholds but only marginally.	Limited data available. The data that is available suggests that the parameter is Potentially Attaining Standards (PAS)	Insufficient information to make an assessment decision.	Limited data available The data that is available suggests that the parameter is Potentially Not Supporting (PNS) water quality standards.	Not meeting water quality standards/thresholds. The impairment is marginal.	Not meeting water quality standards/thresholds The impairment is more severe and causes poor water quality.

Secondary Contact Recreation	3-ND	ESCHERICHIA COLI	N	1998	N/A	3-ND	
Wildlife	3-ND						

Good	**Marginal**	**Likely Good**	**No Current Data**	**Likely Bad**	**Poor**	**Severe**
Meets water quality standards/thresholds by a relatively large margin.	Meets water quality standards/thresholds but only marginally.	Limited data available. The data that is available suggests that the parameter is Potentially Attaining Standards (PAS)	Insufficient information to make an assessment decision.	Limited data available The data that is available suggests that the parameter is Potentially Not Supporting (PNS) water quality standards.	Not meeting water quality standards/thresholds. The impairment is marginal.	Not meeting water quality standards/thresholds The impairment is more severe and causes poor water quality.

NOI ATTACHMENT 4

PH LIMIT ADJUSTMENT REQUEST

SME
SEVEE & MAHER
ENGINEERS

SME
SEVEE & MAHER
ENGINEERS

4 Blanchard Road, P.O. Box 85A
Cumberland, ME 04021
Tel: 207.829.5016 • Fax: 207.829.5692
info@smemaine.com
smemaine.com

June 8, 2023

U.S. Environmental Protection Agency, Region 1
ATTN: George Papadopoulos, HYDROGP Coordinator
5 Post Office Square – Mailcode 06-1
Boston, MA 02109-3912

Email: Hydro.GeneralPermit@epa.gov

Subject: Riverside Hydroelectric Facility – pH Limit Adjustment Request

Dear Mr. Papadopoulos:

As required within Section B.7 of the Hydroelectric Generating Facilities General Permit (Hydro GP) notice of intent (NOI), the Riverside Hydroelectric Facility is providing this written request to adjust the current pH limit range of 6.5 standard units (s.u). to 8.0 s.u. to an alternative pH limit range of 6.0 s.u. to 8.0 s.u. The New Hampshire Department of Environmental Services (NHDES) has provided a signed letter supporting the adjustment of the pH limit range at the facility to the requested alternative value (see Attachment 1).

Should questions arise or additional information be desired, please do not hesitate to contact me at 207.829.5016.

Sincerely,

SEVEE & MAHER ENGINEERS, INC.

Philip H. Gerhardt, P.E.
Principal/Senior Environmental Engineer

Attachments: 1. NHDES pH Limit Adjustment Approval Letter

ATTACHMENT 1

NHDES PH LIMIT ADJUSTMENT APPROVAL LETTER

SME
SEVEE & MAHER
ENGINEERS

The State of New Hampshire
Department of Environmental Services

Robert R. Scott, Commissioner

September 4, 2018

Mr. Kyle Murphy, Compliance Specialist
Brookfield Renewable
Great Lakes Hydro America, LLC
972 Main Street
Berlin, NH 03570

Subject: Brookfield Renewable
NPDES/State Surface Water Discharge Permit No. NHG360006, NHG360008, NHG360009, NHG360010, NHG360011, NHG360016
pH Limit Adjustment

Dear Mr. Murphy:

The Department of Environmental Services (DES) assisted Brookfield Renewable with a pH study to evaluate the potential for a pH range adjustment at six of their NPDES permitted sites: Pontook Hydro (NHG360006), Riverside Hydro (NHG360008), Cross Power Hydro (NHG360009), Cascade Hydro (NHG360010), Gorham Hydro (NHG360011), and Errol Hydro (NHG360016), per their request in a letter dated June 29, 2018. The pH range adjustment was requested for the facilities' upcoming NPDES permit renewals. The pH study was conducted with the help of DES on June 7, 2018 and July 31, 2018 and included data and backup quality assurance information for measurements made on the Androscoggin River.

After reviewing the results of the pH study, DES supports adjusting the permit limit range for pH from 6.5 to 8.0 standard units (s.u.) to 6.0 to 8.0 s.u. in the upcoming NPDES/State Surface Water Discharge Permit renewals for the above referenced facilities. This original signed letter should be submitted to EPA-New England with a written request to include the pH limit range of 6.0 to 8.0 s.u. as an attachment to the Notice of Intent (NOI) for each facility.

Adjustment of the permitted pH range is subject to change by EPA-New England or DES with new information or changing conditions related to either the facility or the receiving water (Androscoggin River). Please note that a permit limits adjustment will be valid only for the duration of the reissued NPDES permit.

If you have any questions relative to this letter, please call me at (603) 271-6637.

Sincerely,

Stergios K. Spanos, P.E., Supervisor
Permits and Compliance Section
Wastewater Engineering Bureau

cc. Georgė Papadopoulos, EPA-NE
Tracy Wood, P.E., DES-WEB

NOI ATTACHMENT 5

DESCRIPTION OF BTA TECHNOLOGY FOR MINIMIZATION OF IMPINGEMENT MORTALITY

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ENGINEERS

SME
SEVEE & MAHER
ENGINEERS

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info@smemaine.com
smemaine.com

June 8, 2023

U.S. Environmental Protection Agency, Region 1
ATTN: George Papadopoulos, HYDROGP Coordinator
5 Post Office Square – Mailcode 06-1
Boston, MA 02109-3912

Email: Hydro.GeneralPermit@epa.gov

Subject: Riverside Hydroelectric Facility – Description of BTA Technology for Minimization of Impingement Mortality

Dear Mr. Papadopoulos:

As requested within Section C.2 of the Hydroelectric Generating Facilities General Permit (Hydro GP) notice of intent (NOI), the Riverside Hydroelectric Facility is providing this description of the technology employed to comply with the general BTA requirements of Part 4.2.b of the Hydro GP. The Riverside facility utilizes two 11-foot-diameter penstocks to deliver water from the Androscoggin River to the two generating turbines. Cooling water is withdrawn from the penstocks through two 4-inch-diameter pipes prior to the water passing through the turbines. Measured water flow data through these penstocks is unavailable; therefore, a calculative approach utilizing the Hazen-Williams Equation was used to determine the volume of water passing through the penstocks and the percentage of cooling water withdrawn for the Riverside facility. Calculations and assumptions are included in Attachment 1.

The facility has calculated that approximately 0.002 percent of the water passing through the penstock to Turbine #3 and approximately 0.005 percent of the water passing through the penstock to Turbine #1 is withdrawn for the Riverside cooling system. As noted in the NOI form, the water withdrawn from the penstocks for use as cooling water is approximately 0.006 percent of the installed turbine capacity, and 0.006 percent of the source water 2022 mean annual flow.

In June 2021, Kleinschmidt Associates performed an entrainment and impingement risk study for several resident fish species near the Riverside facility. The report states that burst speeds for resident fish species are greater than the maximum approach velocity within the intake area near the facility. The report concludes that the overall effect of the facility's operations on resident fish species is expected to be minimal and risk of entrainment is low.

The facility believes it has demonstrated that impingement mortality has been minimized due to the unlikelihood of fish entrainment through the penstocks and the minimal amount of cooling water withdrawn from the penstocks; therefore, the facility should remain eligible for coverage under the Hydro GP in accordance with Option 4 within Section C.2.

Should questions arise or additional information be desired, please do not hesitate to contact me at 207.829.5016.

Sincerely,

SEVEE & MAHER ENGINEERS, INC.

Philip H. Gerhardt, P.E.
Principal/Senior Environmental Engineer

Attachments:
1. Percentage of Cooling Water Withdrawn Calculations
2. Penstock Photographs and Orcas™ Measurement Data
3. 2021 Kleinschmidt Desktop Entrainment Report

ATTACHMENT 1

PERCENTAGE OF COOLING WATER WITHDRAWN CALCULATIONS

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ENGINEERS

Hazen-Williams Equation for Velocity of Water in Gravity Flow

$$v = k\ x\ C\ x\ R^{0.63}\ x\ S^{0.54}$$

v = Fluid velocity *C = Roughness coefficient*
R = Hydraulic radius of the pipe *S= Slope of the energy line*
k = Conversion factor (1.318 for imperial system)

The following assumptions were applied in order to utilize the Hazen-Williams Equation: there are no booster pumps in the pipeline (gravity-fed system only), the piping system is completely full of water, the flow throughout the piping system is turbulent, and the water temperature is in the range of 40 – 75 ºF.

C - Roughness Coefficient Selection
Based on information provided by Brookfield Personnel, it was determined that the two penstocks are constructed of spiral-riveted steel – this corresponds to a roughness coefficient of 100.

S – Slope of the Energy Line
The distance and change in elevation from the inlet of the penstocks to the inlet of the cooling water intake structure was utilized to calculate the slope of the energy line. Through the use of aerial imagery and analysis of topographic maps, it was determined that the distance is approximately 1,450 feet (ft) and the change in elevation is approximately 20 ft. Thus,

$$S = \frac{20\ ft}{1{,}450\ ft} = 0.014$$

R – Hydraulic Radius of the Pipe
Based on photographs provided by the Riverside facility and interviews with Brookfield personnel, the external diameter of each penstock is approximately 11 ft.

$$R = \frac{Area\ of\ Pipe}{Perimeter\ of\ Pipe} = \frac{\pi * (Radius\ of\ Pipe)^2}{\mathbf{2} * \pi\ (Radius\ of\ Pipe)} = \frac{\pi * (5.5\ ft)^2}{2 * \pi\ (5.5\ ft)} = 2.75\ ft$$

v – Fluid Velocity

$$v = k\ x\ C\ x\ R^{0.63}\ x\ S^{0.54} = 1.318\ x\ 100\ x\ (2.75\ ft)^{0.63}\ x\ (0.014)^{0.54} = 24.86\frac{ft}{s}$$

The flow rate of the water passing through each penstock is therefore estimated to be 24.86 ft/s

The estimated velocity and pipe diameter are then used to calculate the volume of water passing through each penstock:

$$Volumetric\ Flow = Area\ of\ Pipe * Fluid\ Velocity = \pi * (5.5\ ft)^2\ x\ 24.86\frac{ft}{s} = 2{,}363\frac{ft^3}{s}$$

$$1\ \frac{ft^3}{s} = 448\ gallons\ per\ minute\ (GPM)$$

$$Volume = 2{,}363\frac{ft^3}{s} = 1{,}058{,}411\ GPM$$

The volume of water passing through each of the penstocks is estimated to be 1,058,411 GPM

Volume of Water Withdrawn for Cooling vs. Volume of Water Passing Through the Penstocks

To determine the average cooling water withdrawal requirements, the Riverside facility measured water flow velocity utilizing an Orcas™ Ultrasonic Flowmeter. The water flow volume was measured at two locations near the intakes of the cooling water system (one location for each penstock).

The volume of water required for the cooling of Turbine #1 was measured to be approximately 51 GPM and the volume of water required for the cooling of Turbine #3 was measured to be approximately 24 GPM.

Percentage of Cooling Water Withdrawn from the Penstocks

$$Percentage\ for\ Turbine\ \#1 = \frac{Volume\ Withdrawn\ for\ Cooling}{Volume\ within\ the\ Penstock}\ x\ 100 = \frac{51\ GPM}{1{,}058{,}411\ GPM} x\ 100$$
$$= 0.005\%$$

$$Percentage\ for\ Turbine\ \#3 = \frac{Volume\ Withdrawn\ for\ Cooling}{Volume\ within\ the\ Penstock}\ x\ 100 = \frac{24\ GPM}{1{,}058{,}411\ GPM} x\ 100$$
$$= 0.002\%$$

It is estimated that 0.005% and 0.002% of the water flowing through the penstocks leading to Turbine #1 and Turbine #3, respectively, is withdrawn for cooling at the Riverside facility.

ATTACHMENT 2

PENSTOCK PHOTOGRAPHS AND ORCAS™ MEASUREMENT DATA

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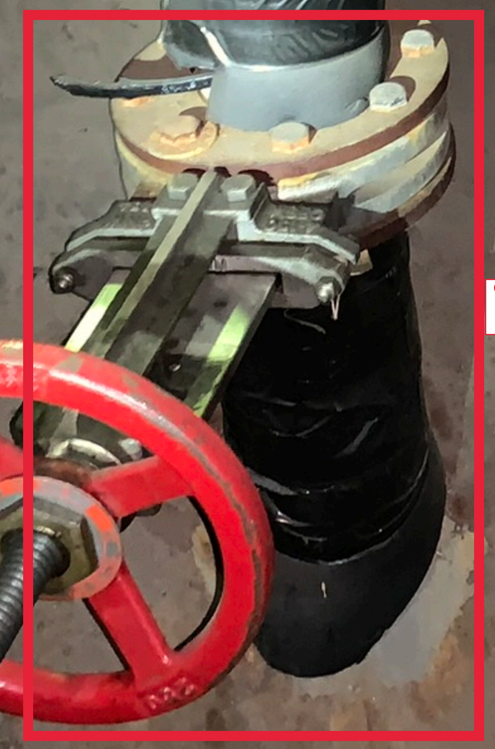

COOLING WATER INTAKE CONNECTION FOR TURBINE #1

COOLING WATER
INTAKE CONNECTION
FOR TURBINE #3

site name: Riverside cooling water unit 1
date/time: 2/20/2023 9:35
number samples: 151
sampling period(s): 2

sample number	date/time (y:m:d h:m:	time delta (h:m:s)	flow rate (gallons/min)	flow volume (gallons)	flow velocity (ft/sec)	measurement quality (good/bad)
1	2/20/2023 9:35	0:00:00	50.2822	447.9895	1.1318	good
2	2/20/2023 9:35	0:00:02	50.283	454.716	1.1319	good
3	2/20/2023 9:35	0:00:04	50.3117	456.3928	1.1325	good
4	2/20/2023 9:36	0:00:07	50.3373	457.2317	1.1331	good
5	2/20/2023 9:36	0:00:09	50.3621	460.8259	1.1336	good
6	2/20/2023 9:36	0:00:11	50.4206	462.5061	1.135	good
7	2/20/2023 9:36	0:00:13	50.4468	464.1876	1.1355	good
8	2/20/2023 9:36	0:00:15	50.4591	465.8695	1.1358	good
9	2/20/2023 9:36	0:00:17	50.4889	467.5833	1.1365	good
10	2/20/2023 9:36	0:00:19	50.5278	469.2672	1.1374	good
11	2/20/2023 9:36	0:00:21	50.566	470.9525	1.1382	good
12	2/20/2023 9:36	0:00:23	50.5652	472.638	1.1382	good
13	2/20/2023 9:36	0:00:25	50.5663	474.3235	1.1382	good
14	2/20/2023 9:36	0:00:27	50.6282	476.0443	1.1396	good
15	2/20/2023 9:36	0:00:29	50.6899	477.7335	1.141	good
16	2/20/2023 9:36	0:00:31	50.7273	479.4241	1.1419	good
17	2/20/2023 9:36	0:00:33	50.7577	481.1158	1.1425	good
18	2/20/2023 9:36	0:00:35	50.7881	482.8085	1.1432	good
19	2/20/2023 9:36	0:00:37	50.8096	484.5358	1.1437	good
20	2/20/2023 9:36	0:00:39	50.8186	486.2296	1.1439	good
21	2/20/2023 9:36	0:00:41	50.8362	487.924	1.1443	good
22	2/20/2023 9:36	0:00:43	50.887	489.6199	1.1455	good
23	2/20/2023 9:36	0:00:45	50.9357	491.3173	1.1465	good
24	2/20/2023 9:36	0:00:47	50.9809	493.0511	1.1476	good
25	2/20/2023 9:36	0:00:49	51.0143	494.7505	1.1483	good
26	2/20/2023 9:36	0:00:51	51.0462	496.4679	1.149	good
27	2/20/2023 9:36	0:00:53	51.0081	498.1685	1.1482	good
28	2/20/2023 9:36	0:00:55	50.9715	499.8679	1.1474	good
29	2/20/2023 9:36	0:00:57	50.9847	501.5842	1.1477	good
30	2/20/2023 9:36	0:00:59	50.9925	503.2841	1.1478	good
31	2/20/2023 9:36	0:01:01	50.972	504.9834	1.1474	good
32	2/20/2023 9:36	0:01:03	50.9295	506.6814	1.1464	good
33	2/20/2023 9:36	0:01:05	50.8883	508.377	1.1455	good
34	2/20/2023 9:37	0:01:07	50.9323	510.1092	1.1465	good
35	2/20/2023 9:37	0:01:09	50.9719	511.8079	1.1474	good
36	2/20/2023 9:37	0:01:11	50.9773	513.5233	1.1475	good
37	2/20/2023 9:37	0:01:13	50.9682	515.2213	1.1473	good
38	2/20/2023 9:37	0:01:15	50.9814	516.9205	1.1476	good
39	2/20/2023 9:37	0:01:17	51.0238	518.6396	1.1485	good
40	2/20/2023 9:37	0:01:19	51.0674	520.3415	1.1495	good
41	2/20/2023 9:37	0:01:21	51.0679	522.0439	1.1495	good
42	2/20/2023 9:37	0:01:23	51.0457	523.7456	1.149	good
43	2/20/2023 9:37	0:01:25	51.0373	525.4469	1.1488	good
44	2/20/2023 9:37	0:01:27	51.0261	527.1819	1.1486	good
45	2/20/2023 9:37	0:01:29	51.0012	528.8822	1.148	good
46	2/20/2023 9:37	0:01:31	50.9881	530.5819	1.1477	good
47	2/20/2023 9:37	0:01:33	50.9807	532.2813	1.1476	good
48	2/20/2023 9:37	0:01:36	50.9671	533.9804	1.1473	good
49	2/20/2023 9:37	0:01:38	50.9476	535.7119	1.1468	good
50	2/20/2023 9:37	0:01:40	50.9421	537.41	1.1467	good
51	2/20/2023 9:37	0:01:42	50.9393	539.1081	1.1466	good
52	2/20/2023 9:37	0:01:44	50.9336	540.8058	1.1465	good
53	2/20/2023 9:37	0:01:46	50.9429	542.5038	1.1467	good
54	2/20/2023 9:37	0:01:48	50.9638	544.2355	1.1472	good
55	2/20/2023 9:37	0:01:50	50.9379	545.9346	1.1466	good
56	2/20/2023 9:37	0:01:52	50.8832	547.6312	1.1454	good
57	2/20/2023 9:37	0:01:54	50.8356	549.3261	1.1443	good
58	2/20/2023 9:37	0:01:56	50.7963	551.0196	1.1434	good
59	2/20/2023 9:37	0:01:58	50.7645	552.7459	1.1427	good
60	2/20/2023 9:37	0:02:00	50.7491	554.4377	1.1423	good
61	2/20/2023 9:37	0:02:02	50.7351	556.145	1.142	good
62	2/20/2023 9:37	0:02:04	50.7193	557.8358	1.1417	good
63	2/20/2023 9:38	0:02:07	50.7202	559.5263	1.1417	good
64	2/20/2023 9:38	0:02:10	50.724	563.0795	1.1418	good
65	2/20/2023 9:38	0:02:12	50.7349	564.7841	1.142	good
66	2/20/2023 9:38	0:02:14	50.7655	566.476	1.1427	good
67	2/20/2023 9:38	0:02:16	50.8	568.169	1.1435	good
68	2/20/2023 9:38	0:02:18	0	569.0339	0	bad

69	2/20/2023 9:38	0:02:21	0	569.0339	0	bad
70	2/20/2023 9:38	0:02:23	0	569.0339	0	bad
71	2/20/2023 9:38	0:02:25	0	569.0339	0	bad
72	2/20/2023 9:38	0:02:27	49.6268	569.861	1.1171	good
73	2/20/2023 9:38	0:02:29	49.6268	571.5152	1.1171	good
74	2/20/2023 9:38	0:02:31	49.1834	573.1621	1.1071	good
75	2/20/2023 9:38	0:02:33	49.6745	574.8478	1.1182	good
76	2/20/2023 9:38	0:02:35	49.9178	576.511	1.1236	good
77	2/20/2023 9:38	0:02:37	49.9588	578.1761	1.1246	good
78	2/20/2023 9:38	0:02:39	50.1419	579.8457	1.1287	good
79	2/20/2023 9:38	0:02:46	0	581.5207	0	bad
80	2/20/2023 9:38	0:02:51	0	581.5207	0	bad
81	2/20/2023 9:38	0:02:54	0	581.5207	0	bad
82	2/20/2023 9:38	0:02:56	0	581.5207	0	bad
83	2/20/2023 9:38	0:02:58	50.2928	581.5207	1.1321	good
84	2/20/2023 9:38	0:03:00	50.2796	583.2123	1.1318	good
85	2/20/2023 9:38	0:03:02	50.6982	584.8983	1.1412	good
86	2/20/2023 9:38	0:03:04	51.1207	586.5998	1.1507	good
87	2/20/2023 9:38	0:03:06	51.2584	588.3076	1.1538	good
88	2/20/2023 9:39	0:03:08	50.9282	590.0112	1.1464	good
89	2/20/2023 9:39	0:03:10	50.531	591.7321	1.1374	good
90	2/20/2023 9:39	0:03:12	50.6847	593.4171	1.1409	good
91	2/20/2023 9:39	0:03:14	51.0133	595.1153	1.1483	good
92	2/20/2023 9:39	0:03:16	51.1254	596.8197	1.1508	good
93	2/20/2023 9:39	0:03:18	50.8173	598.5141	1.1439	good
94	2/20/2023 9:39	0:03:20	50.7803	600.2409	1.1431	good
95	2/20/2023 9:39	0:03:22	51.0582	601.9404	1.1493	good
96	2/20/2023 9:39	0:03:24	51.3105	603.6488	1.155	good
97	2/20/2023 9:39	0:03:26	51.3732	605.3616	1.1564	good
98	2/20/2023 9:39	0:03:28	51.1169	607.0674	1.1506	good
99	2/20/2023 9:39	0:03:30	51.0063	608.8022	1.1481	good
100	2/20/2023 9:39	0:03:32	50.8804	610.4991	1.1453	good
101	2/20/2023 9:39	0:03:34	50.7751	612.1925	1.1429	good
102	2/20/2023 9:39	0:03:36	50.6958	613.8829	1.1411	good
103	2/20/2023 9:39	0:03:38	50.642	615.5715	1.1399	good
104	2/20/2023 9:39	0:03:40	50.6797	617.2951	1.1408	good
105	2/20/2023 9:39	0:03:42	50.6706	618.9838	1.1406	good
106	2/20/2023 9:39	0:03:44	50.6585	620.6728	1.1403	good
107	2/20/2023 9:39	0:03:46	50.6308	622.3606	1.1397	good
108	2/20/2023 9:39	0:03:48	50.5401	624.046	1.1376	good
109	2/20/2023 9:39	0:03:50	50.5208	625.7629	1.1372	good
110	2/20/2023 9:39	0:03:52	50.5472	627.4476	1.1378	good
111	2/20/2023 9:39	0:03:54	50.595	629.1337	1.1389	good
112	2/20/2023 9:39	0:03:56	50.6214	630.821	1.1395	good
113	2/20/2023 9:39	0:03:58	50.6146	632.5084	1.1393	good
114	2/20/2023 9:39	0:04:00	50.6005	634.2288	1.139	good
115	2/20/2023 9:39	0:04:02	50.6152	635.9161	1.1393	good
116	2/20/2023 9:39	0:04:04	50.6087	637.62	1.1392	good
117	2/20/2023 9:39	0:04:06	50.6466	639.3072	1.14	good
118	2/20/2023 9:40	0:04:08	50.6582	640.9957	1.1403	good
119	2/20/2023 9:40	0:04:10	50.6649	642.7022	1.1405	good
120	2/20/2023 9:40	0:04:12	50.6676	644.3911	1.1405	good
121	2/20/2023 9:40	0:04:14	50.658	646.0799	1.1403	good
122	2/20/2023 9:40	0:04:16	50.6454	647.769	1.14	good
123	2/20/2023 9:40	0:04:18	50.6439	649.4562	1.14	good
124	2/20/2023 9:40	0:04:20	50.6509	651.1775	1.1401	good
125	2/20/2023 9:40	0:04:22	50.6553	652.8651	1.1402	good
126	2/20/2023 9:40	0:04:24	50.699	654.5554	1.1412	good
127	2/20/2023 9:40	0:04:26	50.7679	656.247	1.1428	good
128	2/20/2023 9:40	0:04:28	50.8174	657.9405	1.1439	good
129	2/20/2023 9:40	0:04:30	50.8546	659.7074	1.1447	good
130	2/20/2023 9:40	0:04:32	50.8816	661.4033	1.1453	good
131	2/20/2023 9:40	0:04:34	50.8965	663.1167	1.1457	good
132	2/20/2023 9:40	0:04:36	50.9131	664.8128	1.146	good
133	2/20/2023 9:40	0:04:38	50.9409	666.5106	1.1467	good
134	2/20/2023 9:40	0:04:40	50.9707	668.2272	1.1473	good
135	2/20/2023 9:40	0:04:42	51.0003	669.927	1.148	good
136	2/20/2023 9:40	0:04:44	51.0149	671.6274	1.1483	good
137	2/20/2023 9:40	0:04:48	51.021	673.328	1.1485	good
138	2/20/2023 9:40	0:04:50	51.0214	676.9812	1.1485	good
139	2/20/2023 9:40	0:04:52	51.0505	678.6818	1.1491	good
140	2/20/2023 9:40	0:04:54	51.0643	680.3837	1.1494	good
141	2/20/2023 9:40	0:04:56	51.0919	682.1028	1.1501	good

142	2/20/2023 9:40	0:04:58	51.1243	683.8066	1.1508	good
143	2/20/2023 9:40	0:05:00	51.1503	685.5285	1.1514	good
144	2/20/2023 9:40	0:05:03	0	685.5285	0	bad
145	2/20/2023 9:40	0:05:06	0	685.5285	0	bad
146	2/20/2023 9:41	0:05:08	0	685.5285	0	bad
147	2/20/2023 9:41	0:05:10	52.1201	685.5285	1.1732	good
148	2/20/2023 9:41	0:05:12	51.5886	687.2727	1.1612	good
149	2/20/2023 9:41	0:05:14	50.9967	688.9782	1.1479	good
150	2/20/2023 9:41	0:05:16	51.2628	690.683	1.1539	good
151	2/20/2023 9:41	0:05:18	51.5774	692.4003	1.161	good

site name: Riverside unit 3(1)
date/time: 2/20/2023 11:06
number samples: 151
sampling period(s): 2

sample number	date/time (y:m:d h:m	time delta (h:m:s)	flow rate (gallons/min	flow volume (gallons)	flow velocity (ft/sec)	measurement quality (good/bad)
1	2/20/2023 11:06	0:00:00	23.7621	1559.1728	0.5349	good
2	2/20/2023 11:07	0:00:02	23.7819	1562.3464	0.5353	good
3	2/20/2023 11:07	0:00:04	23.7794	1563.1391	0.5353	good
4	2/20/2023 11:07	0:00:06	23.7651	1563.9315	0.5349	good
5	2/20/2023 11:07	0:00:08	23.7546	1564.7231	0.5347	good
6	2/20/2023 11:07	0:00:10	23.7622	1565.5155	0.5349	good
7	2/20/2023 11:07	0:00:12	23.7708	1566.3208	0.5351	good
8	2/20/2023 11:07	0:00:14	23.7845	1567.1132	0.5354	good
9	2/20/2023 11:07	0:00:16	23.7936	1567.9141	0.5356	good
10	2/20/2023 11:07	0:00:18	23.8074	1568.7071	0.5359	good
11	2/20/2023 11:07	0:00:24	23.8061	1569.1043	0.5359	good
12	2/20/2023 11:07	0:00:26	23.8001	1571.9862	0.5357	good
13	2/20/2023 11:07	0:00:28	23.7884	1572.7788	0.5355	good
14	2/20/2023 11:07	0:00:30	23.7958	1573.5724	0.5356	good
15	2/20/2023 11:07	0:00:32	23.8111	1574.3658	0.536	good
16	2/20/2023 11:07	0:00:34	23.8261	1575.1596	0.5363	good
17	2/20/2023 11:07	0:00:36	23.8312	1575.9754	0.5364	good
18	2/20/2023 11:07	0:00:38	23.8312	1576.7698	0.5364	good
19	2/20/2023 11:07	0:00:40	23.8234	1577.5636	0.5363	good
20	2/20/2023 11:07	0:00:42	23.8138	1578.3579	0.536	good
21	2/20/2023 11:07	0:00:44	23.8064	1579.1511	0.5359	good
22	2/20/2023 11:07	0:00:46	23.8126	1579.9607	0.536	good
23	2/20/2023 11:07	0:00:48	23.8037	1580.7546	0.5358	good
24	2/20/2023 11:07	0:00:50	23.7953	1581.5478	0.5356	good
25	2/20/2023 11:07	0:00:52	23.793	1582.3406	0.5356	good
26	2/20/2023 11:07	0:00:54	23.7998	1583.1342	0.5357	good
27	2/20/2023 11:07	0:00:56	23.8012	1583.9435	0.5358	good
28	2/20/2023 11:07	0:00:58	23.8034	1584.7366	0.5358	good
29	2/20/2023 11:07	0:01:00	23.7899	1585.53	0.5355	good
30	2/20/2023 11:08	0:01:02	23.7837	1586.3229	0.5354	good
31	2/20/2023 11:08	0:01:04	23.798	1587.1156	0.5357	good
32	2/20/2023 11:08	0:01:06	23.8173	1587.9257	0.5361	good
33	2/20/2023 11:08	0:01:08	23.8095	1588.7194	0.5359	good
34	2/20/2023 11:08	0:01:10	23.802	1589.5129	0.5358	good
35	2/20/2023 11:08	0:01:12	23.7893	1590.306	0.5355	good
36	2/20/2023 11:08	0:01:14	23.7969	1591.099	0.5357	good
37	2/20/2023 11:08	0:01:16	23.8058	1591.908	0.5359	good
38	2/20/2023 11:08	0:01:18	23.817	1592.7022	0.5361	good
39	2/20/2023 11:08	0:01:20	23.8281	1593.5035	0.5364	good
40	2/20/2023 11:08	0:01:22	23.8393	1594.2976	0.5366	good
41	2/20/2023 11:08	0:01:24	23.8425	1595.0928	0.5367	good
42	2/20/2023 11:08	0:01:26	23.8331	1595.8961	0.5365	good
43	2/20/2023 11:08	0:01:28	23.8303	1596.6901	0.5364	good
44	2/20/2023 11:08	0:01:30	23.8208	1597.4921	0.5362	good
45	2/20/2023 11:08	0:01:32	23.8046	1598.2853	0.5358	good
46	2/20/2023 11:08	0:01:34	23.7884	1599.0781	0.5355	good
47	2/20/2023 11:08	0:01:36	23.7724	1599.8793	0.5351	good
48	2/20/2023 11:08	0:01:38	23.7795	1600.6719	0.5353	good
49	2/20/2023 11:08	0:01:40	23.7889	1601.4648	0.5355	good
50	2/20/2023 11:08	0:01:42	23.8034	1602.2582	0.5358	good
51	2/20/2023 11:08	0:01:44	23.8205	1603.0521	0.5362	good
52	2/20/2023 11:08	0:01:46	23.8104	1603.861	0.536	good
53	2/20/2023 11:08	0:01:48	23.7879	1604.6545	0.5355	good
54	2/20/2023 11:08	0:01:50	23.7798	1605.4471	0.5353	good
55	2/20/2023 11:08	0:01:52	23.7766	1606.2394	0.5352	good
56	2/20/2023 11:08	0:01:54	23.7645	1607.032	0.5349	good
57	2/20/2023 11:08	0:01:57	23.7534	1607.8401	0.5347	good
58	2/20/2023 11:08	0:01:59	23.7494	1608.6318	0.5346	good
59	2/20/2023 11:08	0:02:01	23.7554	1609.4236	0.5347	good
60	2/20/2023 11:09	0:02:03	23.7657	1610.2157	0.535	good
61	2/20/2023 11:09	0:02:05	23.7684	1611.0075	0.535	good
62	2/20/2023 11:09	0:02:07	23.7506	1611.8152	0.5346	good
63	2/20/2023 11:09	0:02:09	23.7334	1612.6065	0.5342	good
64	2/20/2023 11:09	0:02:11	23.717	1613.3969	0.5339	good
65	2/20/2023 11:09	0:02:13	23.7083	1614.1875	0.5337	good
66	2/20/2023 11:09	0:02:15	23.707	1614.9777	0.5336	good
67	2/20/2023 11:09	0:02:17	23.7124	1615.7836	0.5338	good
68	2/20/2023 11:09	0:02:19	23.7177	1616.5741	0.5339	good
69	2/20/2023 11:09	0:02:24	23.719	1616.969	0.5339	good
70	2/20/2023 11:09	0:02:27	23.7203	1619.8364	0.5339	good

71	2/20/2023 11:09	0:02:29	23.7248	1620.6267	0.534	good
72	2/20/2023 11:09	0:02:31	23.7345	1621.4174	0.5343	good
73	2/20/2023 11:09	0:02:33	23.7399	1622.2091	0.5344	good
74	2/20/2023 11:09	0:02:35	23.7501	1623.0008	0.5346	good
75	2/20/2023 11:09	0:02:37	23.7558	1623.8136	0.5347	good
76	2/20/2023 11:09	0:02:39	23.7787	1624.6064	0.5353	good
77	2/20/2023 11:09	0:02:41	23.7999	1625.3996	0.5357	good
78	2/20/2023 11:09	0:02:43	23.8183	1626.193	0.5361	good
79	2/20/2023 11:09	0:02:45	23.8353	1626.9878	0.5365	good
80	2/20/2023 11:09	0:02:47	23.851	1627.7985	0.5369	good
81	2/20/2023 11:09	0:02:49	23.847	1628.5935	0.5368	good
82	2/20/2023 11:09	0:02:51	23.8406	1629.3958	0.5366	good
83	2/20/2023 11:09	0:02:53	23.8293	1630.1898	0.5364	good
84	2/20/2023 11:09	0:02:55	23.8185	1630.9835	0.5361	good
85	2/20/2023 11:09	0:02:57	23.8021	1631.7858	0.5358	good
86	2/20/2023 11:09	0:02:59	23.786	1632.5787	0.5354	good
87	2/20/2023 11:09	0:03:01	23.7894	1633.3791	0.5355	good
88	2/20/2023 11:10	0:03:03	23.8061	1634.1725	0.5359	good
89	2/20/2023 11:10	0:03:05	23.8265	1634.9666	0.5363	good
90	2/20/2023 11:10	0:03:07	23.8327	1635.7689	0.5365	good
91	2/20/2023 11:10	0:03:09	23.8256	1636.5635	0.5363	good
92	2/20/2023 11:10	0:03:11	23.8136	1637.3574	0.536	good
93	2/20/2023 11:10	0:03:13	23.8015	1638.1509	0.5358	good
94	2/20/2023 11:10	0:03:15	23.7864	1638.9439	0.5354	good
95	2/20/2023 11:10	0:03:17	23.7902	1639.7527	0.5355	good
96	2/20/2023 11:10	0:03:19	23.7938	1640.5454	0.5356	good
97	2/20/2023 11:10	0:03:21	23.7995	1641.3391	0.5357	good
98	2/20/2023 11:10	0:03:23	23.8002	1642.1325	0.5357	good
99	2/20/2023 11:10	0:03:25	23.7935	1642.9252	0.5356	good
100	2/20/2023 11:10	0:03:27	23.7869	1643.734	0.5354	good
101	2/20/2023 11:10	0:03:29	23.7895	1644.5266	0.5355	good
102	2/20/2023 11:10	0:03:31	23.7624	1645.3189	0.5349	good
103	2/20/2023 11:10	0:03:33	23.7412	1646.1109	0.5344	good
104	2/20/2023 11:10	0:03:35	23.7351	1646.9021	0.5343	good
105	2/20/2023 11:10	0:03:37	23.7282	1647.7085	0.5341	good
106	2/20/2023 11:10	0:03:39	23.723	1648.4997	0.534	good
107	2/20/2023 11:10	0:03:41	23.7342	1649.2903	0.5342	good
108	2/20/2023 11:10	0:03:43	23.7451	1650.0821	0.5345	good
109	2/20/2023 11:10	0:03:45	23.7357	1650.8734	0.5343	good
110	2/20/2023 11:10	0:03:47	23.7066	1651.6798	0.5336	good
111	2/20/2023 11:10	0:03:49	23.6776	1652.4688	0.533	good
112	2/20/2023 11:10	0:03:51	23.6807	1653.2659	0.533	good
113	2/20/2023 11:10	0:03:53	23.6935	1654.0556	0.5333	good
114	2/20/2023 11:10	0:03:55	23.694	1654.8454	0.5333	good
115	2/20/2023 11:10	0:03:57	23.6945	1655.6436	0.5334	good
116	2/20/2023 11:10	0:03:59	23.7225	1656.4337	0.534	good
117	2/20/2023 11:10	0:04:01	23.7499	1657.233	0.5346	good
118	2/20/2023 11:11	0:04:03	23.7736	1658.0253	0.5351	good
119	2/20/2023 11:11	0:04:05	23.7852	1658.8182	0.5354	good
120	2/20/2023 11:11	0:04:07	23.7943	1659.6192	0.5356	good
121	2/20/2023 11:11	0:04:09	23.7908	1660.4125	0.5355	good
122	2/20/2023 11:11	0:04:11	23.7938	1661.2133	0.5356	good
123	2/20/2023 11:11	0:04:13	23.8175	1662.007	0.5361	good
124	2/20/2023 11:11	0:04:15	23.8409	1662.8015	0.5367	good
125	2/20/2023 11:11	0:04:17	23.8671	1663.6048	0.5372	good
126	2/20/2023 11:11	0:04:19	23.8992	1664.4008	0.538	good
127	2/20/2023 11:11	0:04:25	23.9198	1664.7999	0.5384	good
128	2/20/2023 11:11	0:04:28	23.9407	1667.7286	0.5389	good
129	2/20/2023 11:11	0:04:30	23.9687	1668.5275	0.5395	good
130	2/20/2023 11:11	0:04:32	23.9574	1669.3261	0.5393	good
131	2/20/2023 11:11	0:04:34	23.9381	1670.1669	0.5388	good
132	2/20/2023 11:11	0:04:36	23.9268	1670.9649	0.5386	good
133	2/20/2023 11:11	0:04:38	23.9208	1671.7624	0.5385	good
134	2/20/2023 11:11	0:04:40	23.9232	1672.5594	0.5385	good
135	2/20/2023 11:11	0:04:42	23.9262	1673.3574	0.5386	good
136	2/20/2023 11:11	0:04:44	23.9159	1674.171	0.5383	good
137	2/20/2023 11:11	0:04:46	23.9071	1674.968	0.5381	good
138	2/20/2023 11:11	0:04:48	23.8988	1675.7647	0.538	good
139	2/20/2023 11:11	0:04:50	23.8914	1676.5608	0.5378	good
140	2/20/2023 11:11	0:04:52	23.8651	1677.3565	0.5372	good
141	2/20/2023 11:11	0:04:54	23.8449	1678.1673	0.5367	good
142	2/20/2023 11:11	0:04:56	23.8415	1678.9616	0.5367	good
143	2/20/2023 11:11	0:04:58	23.8307	1679.756	0.5364	good
144	2/20/2023 11:11	0:05:00	23.8338	1680.551	0.5365	good
145	2/20/2023 11:12	0:05:02	23.8207	1681.3447	0.5362	good

146	2/20/2023 11:12	0:05:04	23.8084	1682.1547	0.5359	good
147	2/20/2023 11:12	0:05:06	23.8087	1683.0607	0.5359	good
148	2/20/2023 11:12	0:05:08	23.8163	1683.854	0.5361	good
149	2/20/2023 11:12	0:05:10	23.8235	1684.6485	0.5363	good
150	2/20/2023 11:12	0:05:12	23.8268	1685.4427	0.5363	good
151	2/20/2023 11:12	0:05:14	23.8215	1686.2364	0.5362	good

ATTACHMENT 3

2021 KLEINSCHMIDT DESKTOP ENTRAINMENT REPORT

SME
SEVEE & MAHER
ENGINEERS

Desktop Entrainment Report

GLHA NH Projects

Sawmill (FERC No. 2422)

Riverside (FERC No. 2423)

Cross Power (FERC No. 2326)

Cascade (FERC No. 2327)

Upper Gorham (FERC No. 2311)

Shelburne (FERC No. 2300)

Prepared for:

Great Lakes Hydro America, LLC

Prepared by:

Kleinschmidt

Pittsfield, Maine
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June 2021

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Appendix A Results of Turbine Blade Strike – Sawmill Project

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\003197 Desktop Entrainment Study Report FINAL.docx

1.0 INTRODUCTION

Great Lakes Hydro America, LLC (GLHA), an affiliate of Brookfield Renewable Partners L.P., completed a desktop study to assess the potential risk of entrainment and impingement of resident fish species at the Sawmill, Riverside, Cross, Cascade, Gorham, and Shelburne hydroelectric projects (GLHA NH Projects). All six hydropower projects are on the Upper Androscoggin River near Gorham and Berlin, New Hampshire, in an 11-mile-long, high-gradient reach of the river that supports hydropower generation at eight stations. As described in the Revised Study Plan, the objectives of the study included:

- Describing the configuration of the intake areas at the six hydroelectric projects, including forebay characteristics, size of the intakes, trash rack spacing, extent of coverage of the intakes, approach velocities, and the influence of trash rack debris and cleaning protocols.
- Assessing entrainment risk and impingement risk of stocked salmonids (e.g., brown trout and rainbow trout) and the four most abundant resident fish species known to occur in the study area: fallfish, smallmouth bass, white sucker, and longnose dace (migratory species such as Atlantic salmon and river herring do not occur in the upper Androscoggin River).

2.0 METHODS

GLHA evaluated entrainment risk, impingement risk, and the potential for turbine passage survival of juvenile and adult lifestages of stocked trout, fallfish, smallmouth bass, white sucker, and longnose dace. This combination of species and lifestages represents a range of game species, nongame species, and native species that may be affected by project operations.

Physical Characteristics of the Hydro Projects – GLHA reviewed features of each hydropower project that are applicable to fish entrainment and impingement including:

- Trash rack configuration (e.g., surface area of rack system and clear spacing of trash rack bars).
- Water use through the turbines (e.g., cfs used for generation).
- Approach velocity (feet per second; fps) in front of the trash racks.
- Debris accumulation and handling.
- Turbine characteristics (e.g., power output, turbine type and orientation, revolutions per minute, and head).

Biological Characteristics and Aquatic Habitat – GLHA reviewed relevant biological characteristics of the target species that influences their susceptibility to entrainment and impingement and aquatic habitat in the project area, including:

- Applicable life history information for each species (e.g., length, body width, and burst swim speed for juvenile and adult lifestages).
- Habitat preferences and an assessment of aquatic habitats near the project intakes.
- Propensity to migrate (i.e., requirements for obligatory downstream migration).
- Applicable species- or family-specific turbine survival data.

Analysis of Impingement and Entrainment Risk – For the purpose of this assessment, entrainment and impingement risk for juveniles and adults of each target species is categorized or ranked as high, moderately high, moderate, moderately low, or low according to swim speed (i.e., ability to avoid or resist intake velocities that could result in involuntary entrainment or impingement), body size (likelihood of passing through

trash racks), habitat preference or availability of habitat near the intake area, and the proclivity to move (i.e., migratory requirements).

Fish impingement may occur when a fish is involuntarily trapped on the trash racks. The risk of impingement is a function of fish size and swim speed. Impingement risk was assessed by determining the size of fish that is precluded from being entrained by the trash racks. A conservative measure of this is the interorbital skull width, which can be derived from species-specific ratios of body length to skull width (Smith, 1985). Because the skull is non-compressible, a skull width exceeding the trash rack clear spacing will prevent the fish from becoming entrained. However, fish excluded by the trash rack bars from the turbine may be impinged, if the swim speed is less than the intake velocity at the trash racks. A large fish with a swim speed less than the intake velocity was classified as at high risk of impingement; by contrast, a large fish with a swim speed faster than the intake velocity was classified as a low risk. Burst fish swim speed information was collected from a literature review of published and unpublished information. In instances where information on swim speeds was not readily available, burst swim speed estimates were derived using the following equation developed by the U.S. Fish and Wildlife Service (USFWS):

Burst Swimming Speed (ft/s) = (Fish length (ft) x 3 body lengths per second (ft/s)*(2)[1]

Turbine passage survival estimates were made for those species and lifestages that were found to be at risk (i.e., could physically fit through the trash racks and with swim speeds less that calculated approach velocities). Turbine passage survival estimates were derived from past studies described in the Electric Power Research Institute's (EPRI) database for hydropower projects using sites similar to GLHA NH's hydroelectric facilities. In addition, the USFWS' Turbine Blade Strike Analysis model (Towler and Pica 2018) was used to assess turbine passage survival for those species or lifestages classified as at risk (i.e., in instances where swim speeds were less than calculated approach velocities).

[1] USFWS, 1989.

3.0 RESULTS

3.1 Biological Characteristics and Aquatic Habitat near Intakes

3.1.1 Fish Species

3.1.1.1 Fallfish

The fallfish is one of the most common fish species in the state of New Hampshire (NHDFG 2021). They are found in a wide array of freshwater habitats, but are abundant in rivers and streams that have a mix of rocky and gravel substrates. Spawning occurs in areas with rocky substrates, as male fallfish build nest mounds with pebbles (NHDFG 2021). They are typically found in run and pool habitats in rivers and streams, and in littoral habitats in lakes and ponds. Fallfish are the largest minnow species native to eastern North American, and can grow in excess of 17 inches, although a more common adult size in the northeast is 8 inches (NJDFW 2021).

Based on body width calculations from Smith (1985), an 8-inch-long fallfish would have an interorbital width (i.e., the distance between the eyes as measured across the head and roughly equivalent to skull width) of approximately 0.8 inches. Existing swim speed information for fallfish is limited, but a conservative estimate of burst swimming speed was calculated based on guidance from the USFWS. Burst swim speeds would vary from 2.0 fps for a 4-inch-long fallfish to 6.0 fps for a 12-inch-long fallfish; an 8-inch-long fallfish would be expected to have a burst swim speed of 4.0 fps.

3.1.1.2 Smallmouth Bass

Smallmouth bass typically inhabit rocky areas in lakes, and pool or run habitats with gravel, cobble, or bedrock in rivers and streams. The species is typically found in cool, clear water and often seeks out cover in the form of logs, rocky outcroppings, or manmade structures such as rip-rap. When present in streams, smallmouth bass are often found in areas with relatively swift currents (ADW 2021). In lakes and ponds, or slow moving reaches of rivers, smallmouth bass are often found along rocky shorelines and littoral transition zones. Smallmouth bass can grow as long as 27 inches, but a more common adult size range is 12 to 16 inches (USFWS 2021). Based on body width calculations from Smith (1985), a 14-inch-long smallmouth bass would have an interorbital width of approximately 1.4 inches, and a 20-inch-long smallmouth bass would

have an interorbital width of approximately 2 inches. Adult smallmouth bass of multiple size classes have documented sustained swim speeds of approximately 3.25 fps (Bell 1991). Based on calculations that suggest a burst speed as approximately two times sustained speed (USFWS 2019), a 14-inch-long smallmouth bass would be expected to have a burst speed of 7.0 fps. A 4-inch-long smallmouth bass would be expected to have a burst speed of 2.0 fps, and an 8-inch-long smallmouth would be expected to have a burst speed of 4.0 fps.

3.1.1.3 White Sucker

White suckers use a wide range of habitats, and are tolerant of pollution, high turbidity levels, and low dissolved oxygen levels. They are found in lakes and rivers across multiple stream gradients and variable water velocities. As habitat generalists, white suckers can be found in areas with dense weeds, or in bedrock and other rocky substrates with minimal vegetation. Adult white suckers generally grow to lengths between 10 and 20 inches (IDNR 2021). Based on body width calculations from Smith (1985), a 14-inch-long white sucker would have an interorbital width of approximately 2 inches and a 20-inch-long white sucker would have an interorbital width of approximately 3 inches. A 12-inch-long white sucker has a burst speed of 6.0 fps based on USFWS swim speed parameters (USFWS 1989; USFWS 2019). Longnose sucker, a similar species that shares habitats with white sucker in parts of their range, have documented burst speeds of approximately 6 fps at lengths of approximately 10 inches (Bell 1991). Smaller individuals (6-inches-long) would have burst speeds of 3.0 fps.

3.1.1.4 Longnose Dace

Longnose dace are the most widely distributed minnow species in North America, and are found in all major watersheds in New Hampshire. Although they can be found in slow moving water and lake habitats, the preferred habitat for longnose dace is swift flowing riffles. The species is most often found in riffles with boulder, cobble, and gravel substrates, as their streamlined morphology allows them the ability to maintain position on the bottom in fast flows. Longnose dace can get as long as 7 inches, but a more common adult length is approximately 4 inches (USGS 2004). A 4-inch-long longnose dace would have an interorbital width of approximately 0.5 inches (Smith 1985). Longnose dace swim speeds are not readily available in existing literature, but USFWS body size and swim speed parameters suggest that a 4-inch-long longnose dace has a burst speed of

2.0 fps. Given that longnose dace occurs in fast-flowing riverine waters, no additional analysis of entrainment and impingement risk for this species was completed as risk of entrainment and impingement is very low at hydropower intakes in impounded waters.

3.1.1.5 Stocked Trout

The NHFGD stocks the upper Androscoggin River annually with catchable-sized (e.g., 8 to 10-inch-long) brook trout, rainbow trout, and brown trout. As such they have the potential to encounter project features and become entrained. Most trout stocking locations are more than 10 miles upriver from the Berlin area; NHDFG has not stocked trout between Berlin and Shelburne, New Hampshire, since 2003 because of fish consumption advisories (personal communication, Jesse Wechsler, Kleinschmidt, with Diane Timmons, NHDFG June 28, 2019). Of the three species of salmonids that are stocked in the Androscoggin River, brook trout are the least tolerant to turbidity and increased water temperature. Brown trout are the most ubiquitous species, and can be found in a wide array of habitats. All three species prefer cool, clean water. Preferred habitats in creeks and rivers include slower, deeper areas downstream of riffles. Riffle habitats with current breaks can also be used as foraging habitat for all three species. In general, adults are well adapted to deeper water habitats, while young fish often use swift water habitats (WIDNR 2019). There are some differences in average and maximum length, but all three species have similar body morphology. A 12-inch-long brown trout, rainbow trout, or brook trout would have an interorbital width of 0.9 inches (Smith 1985). A 10-inch-long trout has a burst swim speed of 5 fps based on USFWS parameters. An 8-inch-long trout has a burst speed of approximately 4.0 fps.

3.1.2 Fish Habitat in the Project Area

3.1.2.1 Sawmill Project

The Sawmill intake area contains no structural fish habitat such as aquatic plant beds, rocky substrates, gravel, or woody debris. The shoreline on the river right side[2] of the intake area is steep, disturbed from urban development, and provides limited habitat or structure (Photo 3.1). The river left shoreline near the intake is composed of steel and concrete associated with the dam or large gate structures (Photo 3.1 and Photo 3.2). Because there is no fish habitat other than open water near the intake and no migratory

[2] From the perspective of an observer looking downstream.

fish species, it is expected that few fish inhabit the area permanently. There is no habitat for stocked salmonids in the Sawmill impoundment near the intakes.

Photo 3.1 Sawmill Intake and Forebay Area, Upper Androscoggin River.

Photo 3.2 Sawmill Intake and Forebay Area, Upper Androscoggin River.

3.1.2.2 Riverside Project

The Riverside intake area includes some rocky shoreline habitat and overhanging vegetation on the river right that provides aquatic habitat. As such, white sucker, smallmouth bass, and fallfish may use this area. The river left shoreline near the intake is composed of steel and concrete associated with the dam or large gate structures (Photo 3.3 and Photo 3.4). Given that the Riverside Project intake areas is situated immediately downstream of the Sawmill Project and there is limited or no spawning or nursery habitat, it is unlikely that the Riverside impoundment supports large populations of fish. There is no habitat for stocked salmonids in the Riverside impoundment near the intakes.

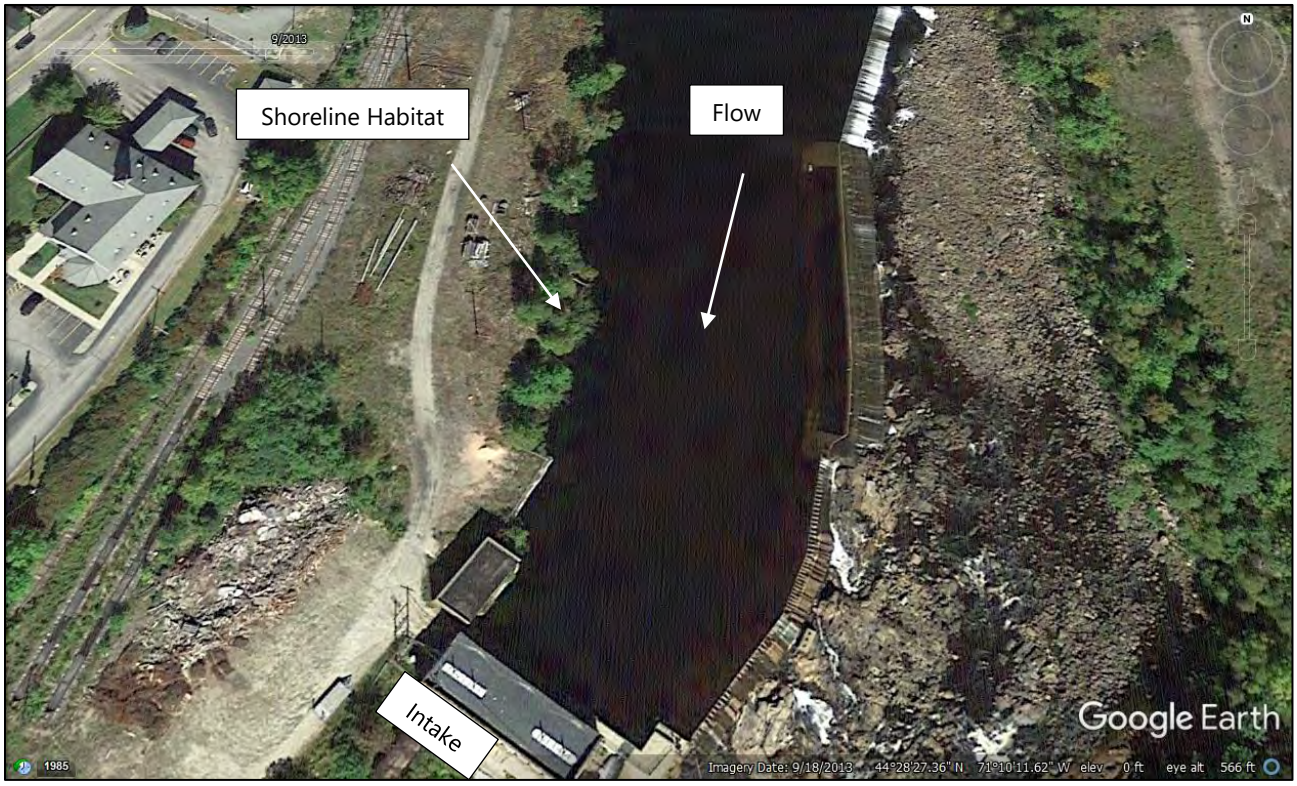

Photo 3.3 Riverside Intake and Forebay Area, Upper Androscoggin River.

Photo 3.4 Riverside Intake and Forebay Area, Upper Androscoggin River.

3.1.2.3 Cross Project

The Cross intake area includes some sandy, vegetated shoreline on the river left that provides habitat for juvenile fish and other aquatic species (Photo 3.5and Photo 3.6). As such, white suckers, smallmouth bass, and fallfish may inhabit this area. There is no habitat for stocked salmonids in the Cross impoundment near the intakes.

Photo 3.5 Cross Intake and Forebay Area, Upper Androscoggin River.

Photo 3.6 Cross Intake and Forebay Area, Upper Androscoggin River.

3.1.2.4 Cascade Project

The intake to the Cascade Project is a constructed power canal surrounded by mill buildings and the superstructure of the dam (Photo 3.7 and Photo 3.8). Because there is no fish habitat near the intake and no migratory fish species in the Upper Androscoggin River, it is expected that few fish inhabit the area permanently. There is no habitat for stocked salmonids in the Cascade impoundment near the intakes.

Photo 3.7 Cascade Intake and Forebay Area, Upper Androscoggin River.

Photo 3.8 Cascade Intake and Forebay Area, Upper Androscoggin River.

3.1.2.5 Gorham Project

The intake to the Gorham Project is a lined, constructed power canal that is approximately 3,350-feet long. There are some shoreline features in the canal that provide habitat for fish like rip-rap boulders and aquatic vegetation beds (Photo 3.9 and Photo 3.10). As such, white suckers, smallmouth bass, and fallfish may inhabit this area. There is no habitat for stocked salmonids at the Gorham Project near the intakes.

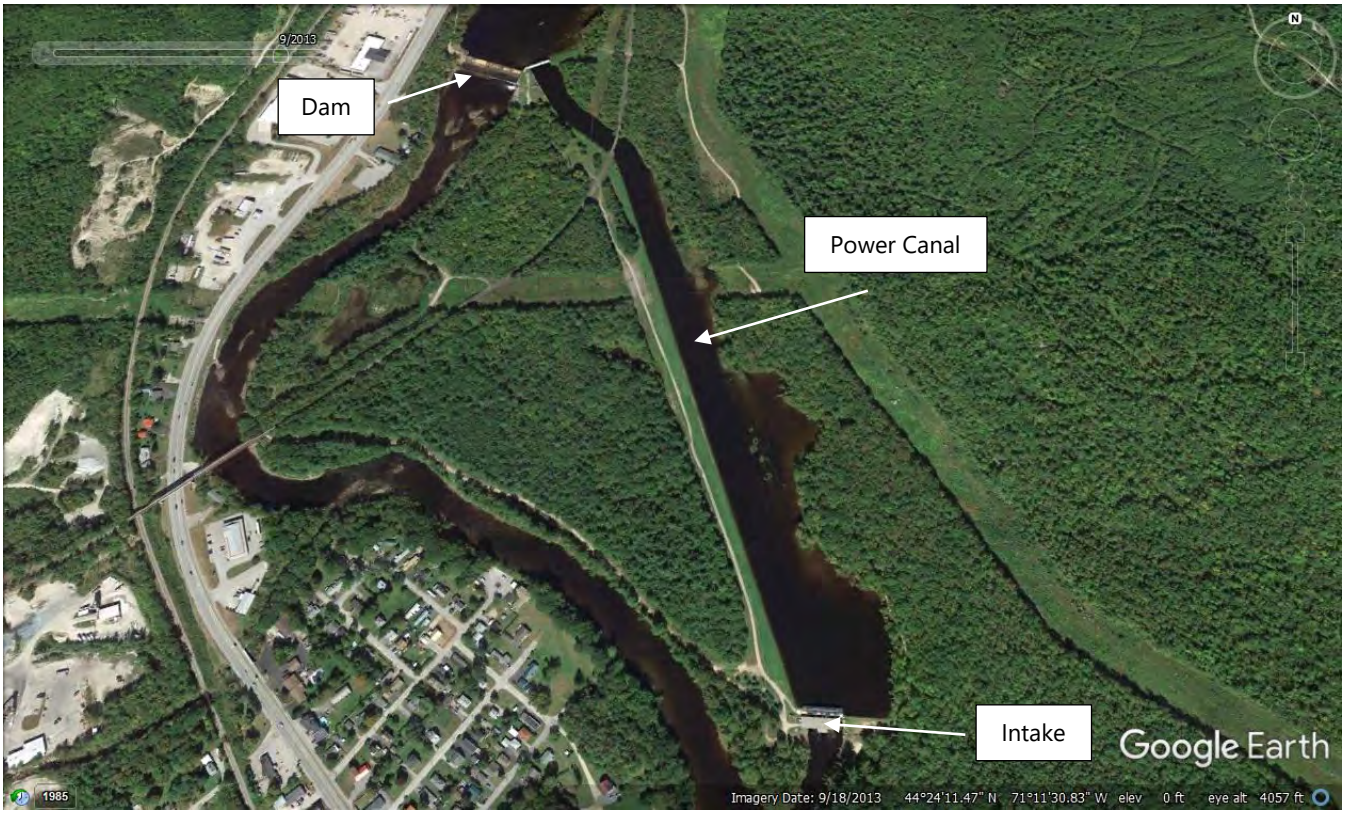

Photo 3.9 Gorham Intake and Forebay Area, Upper Androscoggin River.

Photo 3.10 Gorham Project Power Canal, Upper Androscoggin River.

3.1.2.6 Shelburne Project

There are some shoreline features near the intake at the Shelburne Project that provide habitat for fish such as shoreline vegetation, rip-rap, and instream cover (Photo 3.11 and Photo 3.12). As such, resident species such as suckers, smallmouth bass, and fallfish may use this area. There is no salmonid habitat near the intake; therefore, the risk of entrainment for stocked salmonids is low.

Photo 3.11 Shelburne Project Intake Area, Upper Androscoggin River.

Photo 3.12 Shelburne Project Intake Area, Upper Androscoggin River.

3.2 Risk of Impingement and Entrainment

3.2.1 Sawmill Project

The Sawmill Project has four horizontal propeller turbines (i.e., similar to Kaplan turbines). The total hydraulic capacity of the station is 2,484 cfs with a maximum generation of 3.34 megawatts (MW). Each turbine's trash rack has a surface area of 241 square feet (14-ft X 17.2-ft) for a total rack area of 963.2 square feet. Full depth, vertical trash rack bars are spaced at 3 inches. Relevant turbine and site characteristics are provided in Table 3.1.

Table 3.1 Characteristics of the Sawmill Project

Characteristic	Sawmill Project Unit 1	Sawmill Project Unit 2	Sawmill Project Unit 3	Sawmill Project Unit 4
Turbine Orientation	Horizontal	Horizontal	Horizontal	Horizontal
Turbine Type (e.g., Kaplan/Francis)	Fixed Blade Prop	Fixed Blade Prop	Fixed Blade Prop	Adjustable Blade Prop
Rated Power (MW)	0.8	0.87	0.8	0.87
Turbine Rated Max Flow (cfs)	590	652	590	652
Head (feet)	17.2			
Turbine RPM	200	200	200	200
Runner Diameter (feet)	6.6	6.6	6.6	6.6
Number of Blades or Buckets	4	4	4	4
Description of Debris Management/Removal	Hydraulic Rake			
Gross Dimensions of Trash Rack (square feet)	241	241	241	241
Calculated Approach Velocity (fps)	2.5	2.7	2.5	2.7
Clear (Open) Spacing Between Trash Rack Bars	3 inches			

The Sawmill Project is characterized by a large power canal and limited to no habitat in the forebay and intake area other than open water. Trash rack spacing is wide enough for adult smallmouth bass, white sucker, and fallfish to become entrained. Maximum intake velocities are approximately 2.7 fps when operating at the full hydraulic capacity of 2,484 cfs. Burst speeds of adult fallfish, smallmouth bass, and white sucker are greater than the maximum approach velocity of 2.7 fps, which means fish can swim away from the intake area to avoid entrainment. However, small juvenile lifestages of fallfish, smallmouth bass, and white sucker (e.g., 4-inch-long fish) have burst speeds of approximately 2.0 fps. Therefore, there is a moderately low risk of entrainment for young, juvenile smallmouth bass, fallfish, and white sucker if in the forebay area. Impingement is unlikely because of the wide rack spacing and low approach velocities.

Entrainment studies have been conducted at projects with horizontal Kaplan turbines, similar to those at the Sawmill Project. Specifically, the Townsend and Wilder hydroelectric projects have similar characteristics to the Sawmill Project, with head less than 50 feet and horizontal Kaplan or fixed blade turbines. Small, juvenile fish (e.g., 3 to 5 inches long) had survival estimates ranging from 96 to 100 percent during those studies. Additionally, other projects where entrainment survival has been studied have documented survival rates of at least 95 percent for juvenile lifestages (i.e., less than 5 inches total length) (EPRI 1997). Similarly, survival estimates for small (3 to 5 inches long), juvenile fish through the Sawmill turbines was predicted to be above 95 percent based on the USFWS's turbine blade strike model results (Appendix A provides the Turbine Blade Strike Analysis (TBSA) results for the Sawmill Project).

Based on the lack of habitat in the forebay and intake area, low velocities in front of the trash racks, wide trash rack bars, non-migratory life cycles, and high survival of juvenile fish through similar turbines, the overall effect of project operations on resident fish species is expected to be minimal and risk of entrainment is considered moderately low. Trash raking is done with a hydraulic rack rake; it is expected this has no influence on impingement and entrainment of fish.

3.2.2 Riverside

The Riverside Project has two vertical Francis turbines. The total hydraulic capacity of the station is 1,880 cfs with a maximum generation of 7.9 MW. Each turbine's trash rack has a surface area of 528 square feet (24-ft X 22-ft) for a total rack area of 1,056 square feet. Full depth, vertical trash rack bars are spaced at 2.5 inches. Relevant turbine and site characteristics are provided in Table 3.2.

Table 3.2 Characteristics of the Riverside Project

Characteristic	Riverside Unit 1	Riverside Unit 2
Turbine Orientation	Vertical	Vertical
Turbine Type (e.g., Kaplan/Francis)	Francis	Francis
Rated Power (MW)	3.8	4.1
Turbine Rated Max Flow (cfs)	910	970
Head (feet)	65.8	
Turbine RPM	200	200
Description of Debris Management/Removal	Hydraulic Rake	

Gross Dimensions of Trash Rack (square feet)	528	528
Calculated Approach Velocity (fps)	1.7	1.8
Clear (Open) Spacing Between Trash Rack Bars	2.5 inches	

The Riverside Project has a limited amount of habitat in the forebay and intake area consisting of some rocky shoreline habitat and overhanging vegetation. Trash rack spacing is wide enough for most adult smallmouth bass, white sucker, and fallfish to pass through; however, maximum intake velocities range from 1.7 to 1.8 fps when operating at the full hydraulic capacity of 1,880 cfs. Burst speeds for juvenile and adult fallfish, smallmouth bass, and white sucker are greater than the maximum approach velocity of 1.8 fps, which means fish can swim away from the intake area to avoid entrainment. Impingement is unlikely because of the wide rack spacing and low approach velocities. Based on the limited amount of aquatic habitat in the forebay and intake area, low velocities in front of the trash racks, wide trash rack bars, and non-migratory life cycles in the Upper Androscoggin River, the overall effect of project operations on resident fish species is expected to be minimal and risk of entrainment is low. Trash raking is done with a hydraulic rack rake; it is expected this has no influence on impingement and entrainment of fish.

3.2.3 Cross

The Cross Project has five horizontal propeller turbines (i.e., similar to Kaplan turbines). The total hydraulic capacity of the station is 2,890 cfs with a maximum generation of 3.67 MW. Each turbine's trash rack has a surface area of 422 square feet (22 ft X 19.2 ft) for a total rack area of 2,112 square feet. Full depth, vertical trash rack bars are spaced at 3 inches. Relevant turbine and site characteristics are provided in Table 3.3.

Table 3.3 Characteristics of the Cross Project

Characteristic	Cross Unit 1	Cross Unit 2	Cross Unit 3	Cross Unit 4	Cross Unit 5
Turbine Orientation	Horizontal	Horizontal	Horizontal	Horizontal	Horizontal
Turbine Type (e.g., Kaplan/Francis)	Propeller	Propeller	Propeller	Propeller	Propeller
Rated Power (MW)	0.7	0.7	0.7	0.7	0.87
Turbine Rated Max Flow (cfs)	550	600	550	550	640
Head (feet)	20				
Turbine RPM	225	225	225	200	240
Number of Blades or Buckets	4	4	4	4	4
Gross Dimensions of Trash Rack (square feet)	422	422	422	422	422
Calculated Approach Velocity (fps)	1.3	1.4	1.3	1.3	1.5
Description of Debris Management/Removal	Hand Rake				
Clear (Open) Spacing Between Trash Rack Bars	3 inches				

The Cross Project has a limited amount of habitat in the forebay and intake area consisting of some shoreline mud flats and aquatic vegetation beds. Trash rack spacing is wide enough for most adult smallmouth bass, white sucker, and fallfish to pass through; however, maximum intake velocities range from 1.3 to 1.5 fps when operating at the full hydraulic capacity of 1,880 cfs. Burst speeds for juvenile and adult fallfish, smallmouth bass, and white sucker are greater than the maximum approach velocity of 1.5 fps, which means fish can swim away from the intake area to avoid entrainment. Impingement is unlikely because of the wide rack spacing and low approach velocities. Based on the limited amount of aquatic habitat in the forebay and intake area, low velocities in front of the trash racks, wide trash rack bars, and non-migratory life cycles in the Upper Androscoggin River, the overall effect of project operations on resident fish species is expected to be minimal and risk of entrainment is low. Trash raking is done manually; it is expected this has no influence on impingement and entrainment of fish.

3.2.4 Cascade

The Cascade Project has three vertical Francis turbines. The total hydraulic capacity of the station is 2,950 cfs with a maximum generation of 7.92 MW. The trash rack has a surface area of approximately 2,250 square feet. Full depth, vertical trash rack bars are spaced at 2.5 inches. Relevant turbine and site characteristics are provided in Table 3.4.

Table 3.4 Characteristics of the Cascade Project

Characteristics	Cascade Unit 1	Cascade Unit 2	Cascade Unit 3
Turbine Orientation	Vertical	Vertical	Vertical
Turbine Type (e.g., Kaplan/Francis)	Francis	Francis	Francis
Rated Power (MW)	2.5	2.5	2.92
Turbine Rated Max Flow (cfs)	950	950	1050
Head (feet)	47		
Turbine RPM	150	150	150
Gross Dimensions of Trash Rack (square feet)	2,250		
Calculated Approach Velocity (fps)	1.3		
Description of Debris Management/Removal	Hand Rake		
Clear (Open) Spacing Between Trash Rack Bars	2.5 inches		
Total Hydraulic Capacity (cfs)	2,950		

The Cascade Project is characterized by a forebay and intake area with no aquatic habitat other than open water. Trash rack spacing is wide enough for adult smallmouth bass, white sucker, and fallfish to pass through. Maximum intake velocities are approximately 1.3 fps when operating at the full hydraulic capacity of 2,250 cfs. Burst speeds for adult fallfish, smallmouth bass, and white sucker are greater than the maximum approach velocity of 1.3 fps, which means fish can swim away from the intake area to avoid entrainment. Based on the lack of habitat in the forebay and intake area, low velocities in front of the trash racks, wide trash rack bars, non-migratory life cycles, and high survival of juvenile fish through similar turbines, the overall effect of project operations on resident fish species is expected to be minimal and risk of entrainment is low. Trash raking is done manually; it is expected this has no influence on impingement and entrainment of fish.

3.2.5 Gorham Project

The Gorham Project has four horizontal Francis turbines. The total hydraulic capacity of the station is 2,200 cfs with a maximum generation of 4.8 MW. Each turbine's trash rack has a surface area of 416 square feet (20.8-ft X 20.0-ft) for a total rack area of 1,664 square feet. Full depth, vertical trash rack bars are spaced at 3.125 inches. Relevant turbine and site characteristics are provided in Table 3.5.

Table 3.5 Characteristics of the Gorham Project

Characteristics	Gorham Unit 1	Gorham Unit 2	Gorham Unit 3	Gorham Unit 4
Turbine Orientation	Horizontal	Horizontal	Horizontal	Horizontal
Turbine Type (e.g., Kaplan/Francis)	Francis	Francis	Francis	Francis
Rated Power (MW)	1.2	1.2	1.2	1.2
Turbine Rated Max Flow (cfs)	550	550	550	550
Head (feet)	30			
Turbine RPM	164	164	164	164
Description of Debris Management/Removal	Hand Rake			
Gross Dimensions of Trash Rack (square feet)	416	416	416	416
Calculated Approach Velocity (fps)	1.3	1.3	1.3	1.3
Clear (Open) Spacing Between Trash Rack Bars	3.125 inches			

The Gorham Project has some shoreline features in the lined canal near the intake that provide limited habitat for fish such as rip-rap boulders and small areas of aquatic vegetation. Trash rack spacing is wide enough for most adult smallmouth bass, white sucker, and fallfish to pass through; however, maximum intake velocities are 1.3 fps when

operating at the full hydraulic capacity of 2,200 cfs. Burst speeds for juvenile and adult fallfish, smallmouth bass, and white sucker are greater than the maximum approach velocity of 1.3 fps, which means they can swim away from the intake area to avoid entrainment. Impingement is unlikely because of the wide rack spacing and low approach velocities. Based on the limited amount of aquatic habitat in the forebay and intake area, low velocities in front of the trash racks, wide trash rack bars, and non-migratory life cycles in the Upper Androscoggin River, the overall effect of project operations on resident fish species is expected to be minimal and the risk of entrainment is low. Trash raking is done manually; it is expected this has no influence on impingement and entrainment of fish.

3.2.6 Shelburne

The Shelburne Project has two vertical Francis turbines and one vertical Kaplan turbine. The total hydraulic capacity of the station is 3,400 cfs with a maximum generation of 3.72 MW. Individual turbine trash rack surface area ranges from 624 square feet (24-ft x 26-ft for unit 1 and unit 2) to 1,056 square feet (24-ft x 44-ft for unit 3). Relevant turbine and site characteristics are provided in Table 3.6. Full depth, vertical trash rack bars are spaced at 3 inches.

Table 3.6 Characteristics of the Shelburne Project

Characteristics	Shelburne Unit 1	Shelburne Unit 2	Shelburne Unit 3
Turbine Orientation	Vertical	Vertical	Vertical
Turbine Type (e.g., Kaplan/Francis)	Francis	Francis	Kaplan
Rated Power (MW)	0.96	0.96	1.8
Turbine Rated Max Flow (cfs)	800	800	1800
Head (feet)	16.5		
Turbine RPM	90	90	90
Description of Debris Management/Removal	Hydraulic Rake		
Gross Dimensions of Trash Rack (square feet)	624	624	1,056
Calculated Approach Velocity (fps)	1.3	1.3	1.7
Clear (Open) Spacing Between Trash Rack Bars	3 inches		
Total Hydraulic Capacity (cfs)	3,400		

The Shelburne Project has some shoreline features near the intake that may provide intermittent habitat for fish such as rip-rap boulders and aquatic vegetation beds. Trash rack spacing is wide enough for most adult smallmouth bass, white sucker, and fallfish to pass through; however, maximum intake velocities range from 1.3 to 1.7 fps when

operating at the full hydraulic capacity of 3,400 cfs. Burst speeds for juvenile and adult fallfish, smallmouth bass, and white sucker are greater than the maximum approach velocity of 1.7 fps, which means they can swim away from the intake area to avoid entrainment. Impingement is unlikely because of the wide rack spacing and low approach velocities. Based on the limited amount of aquatic habitat in the forebay and intake area, low velocities in front of the trash racks, wide trash rack bars, and non-migratory life cycles in the Upper Androscoggin River, the overall effect of project operations on resident fish species is expected to be minimal and the risk of entrainment is low. Trash raking is done with a hydraulic rack rake; it is expected this has no influence on impingement and entrainment of fish.

4.0 SUMMARY

The risk of impingement and entrainment of fish at GLHA's six hydropower projects on the upper Androscoggin River is low. This is a result of several factors including:

- The limited amount of aquatic habitat near the intake areas, which reduces the likelihood that fish will encounter the intake areas.
- The industrial nature and developmental history of the Project area, which has resulted in limited fisheries management in the 11-mile-long reach of the Androscoggin River between the Sawmill Project and the Shelburne Project.
- Low water velocities in front of the intake racks (e.g., less than 2 fps at all sites other than Sawmill as further described below) and the ability of fish to swim away from the racks.
- The presence of full depth, vertical bar racks, which exclude large fish from the turbines.
- The absence of migratory fish that require downstream passage and are therefore more at risk of entrainment as compared to resident fish species found at these projects; the natural range of migratory, anadromous fish does not extend to the upper Androscoggin River.

As mentioned above, while the risk of impingent and entrainment is moderately low at the Sawmill Project, small, resident fish (e.g., less than 5-inches-long) that may encounter the intake area have the potential to become entrained because approach velocities are expected to be greater than 2.5 fps at full generation. However, given the characteristics of the Sawmill Project (e.g., low head, few turbine blades), survival of small, juvenile fish is expected to be high (95 to 96 percent) based on results of the turbine blade strike model analysis and previous studies completed at similar hydropower projects. Survival rates of 95 percent or higher have been documented for entrained fish with lengths of 3 to 5 inches at multiple generating stations where entrainment mortality has been studied (EPRI 1997).

GLHA is proposing no changes to operations at any of the GLHA NH projects; therefore, the risk of entrainment or impingement is expected to remain low during the term of a new license.

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APPENDIX A

TURBINE BLADE STRIKE ANALYSIS RESULTS FOR THE SAWMILL PROJECT

Summary of Turbine Blade Strike Analyses
Sawmill Project

Summary	Run Name	.N1000-L5-S95	.N1000-L5-S96	.N1000-L5-S96(2)	.N1000-L5-S96(3)	.N1000-L5-S96(4)
	Number of Fish	1000	1000	1000	1000	1000
	Length, Avg. (inch)	5	5	5	5	5
	Length, SD	1	1	1	1	1
	Turbine Strikes	49	42	43	42	44
	Bypass Failures	0	0	0	0	0
	Fish Passed	951	958	957	958	956
Route Types	Francis	0	0	0	0	0
	Kaplan	1	1	1	1	1
	propeller	0	0	0	0	0
	bypass	0	0	0	0	0
	Rt. 1	Kaplan	Kaplan	Kaplan	Kaplan	Kaplan
Mortalities	Rt. 1	49	42	43	42	44
Selection Prob.	Rt. 1	100.0%	100.0%	100.0%	100.0%	100.0%
Avg. Strike Prob.	Rt. 1	4.6%	4.6%	4.6%	4.6%	4.7%
Mean Fish Length	Rt. 1	5.0	5.0	5.0	5.0	5.1
Survival Estimate		**95.1%**	**95.8%**	**95.7%**	**95.8%**	**95.6%**

NOI ATTACHMENT 6

USFWS ESA CERTIFICATION LETTERS

SME
SEVEE & MAHER
ENGINEERS

United States Department of the Interior

FISH AND WILDLIFE SERVICE
New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
Phone: (603) 223-2541 Fax: (603) 223-0104

In Reply Refer To: March 23, 2023
Project Code: 2023-0059266
Project Name: Riverside Hydroelectric Facility Endangered Species Act Certification

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

Updated 3/8/2023 - Please review this letter each time you request an Official Species List, we will continue to update it with additional information and links to websites may change.

About Official Species Lists

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Federal and non-Federal project proponents have responsibilities under the Act to consider effects on listed species.

The enclosed species list identifies threatened, endangered, proposed, and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested by returning to an existing project's page in IPaC.

Endangered Species Act Project Review

Please visit the "**New England Field Office Endangered Species Project Review and Consultation**" website for step-by-step instructions on how to consider effects on listed

species and prepare and submit a project review package if necessary:

https://www.fws.gov/office/new-england-ecological-services/endangered-species-project-review

NOTE Please do not use the **Consultation Package Builder** tool in IPaC except in specific situations following coordination with our office. Please follow the project review guidance on our website instead and reference your **Project Code** in all correspondence.

Northern Long-eared Bat - (Updated 3/8/2023) The Service published a final rule to reclassify the northern long-eared bat (NLEB) as endangered on November 30, 2022. The final rule will go into effect on **March 31, 2023**. After that date, the current 4(d) rule for NLEB will be invalid, and the 4(d) determination key will no longer be available. New compliance tools will be available in March 2023, and information will be posted in this section on our website and on the northern long-eared bat species page, so please check this site often for updates.

Depending on the type of effects a project has on NLEB, the change in the species' status may trigger the need to re-initiate consultation for any actions that are not completed and for which the Federal action agency retains discretion once the new listing determination becomes effective. If your project may result in incidental take of NLEB after the new listing goes into effect, this will need to be addressed in an updated consultation that includes an Incidental Take Statement. Many of these situations will be addressed through the new compliance tools. If your project may require re-initiation of consultation, please wait for information on the new tools to appear on this site or contact our office for additional guidance.

Additional Info About Section 7 of the Act
Under section 7(a)(2) of the Act and its implementing regulations (50 CFR 402 et seq.), Federal agencies are required to determine whether projects may affect threatened and endangered species and/or designated critical habitat. If a Federal agency, or its non-Federal representative, determines that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Federal agency also may need to consider proposed species and proposed critical habitat in the consultation. 50 CFR 402.14(c)(1) specifies the information required for consultation under the Act regardless of the format of the evaluation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

https://www.fws.gov/service/section-7-consultations

In addition to consultation requirements under Section 7(a)(2) of the ESA, please note that under sections 7(a)(1) of the Act and its implementing regulations (50 CFR 402 et seq.), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species. Please contact NEFO if you would like more information.

Candidate species that appear on the enclosed species list have no current protections under the ESA. The species' occurrence on an official species list does not convey a requirement to

consider impacts to this species as you would a proposed, threatened, or endangered species. The ESA does not provide for interagency consultations on candidate species under section 7, however, the Service recommends that all project proponents incorporate measures into projects to benefit candidate species and their habitats wherever possible.

Migratory Birds

In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts see:

https://www.fws.gov/program/migratory-bird-permit

https://www.fws.gov/library/collections/bald-and-golden-eagle-management

Please feel free to contact us at **newengland@fws.gov** with your **Project Code** in the subject line if you need more information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat.

Attachment(s): Official Species List

Attachment(s):

- Official Species List

OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
(603) 223-2541

PROJECT SUMMARY

Project Code: 2023-0059266
Project Name: Riverside Hydroelectric Facility Endangered Species Act Certification
Project Type: Power Gen - Hydropower - FERC
Project Description: The Riverside Hydroelectric Facility is required to undergo an endangered species act certification as part of the notice of intent (NOI) renewal associated with the 2023 NPDES General Permit for Hydroelectric Generating Facilities (NHG360000).

Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@44.473883099999995,-71.1698243071273,14z

Counties: Coos County, New Hampshire

ENDANGERED SPECIES ACT SPECIES

There is a total of 3 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

MAMMALS

NAME	STATUS
Canada Lynx *Lynx canadensis* Population: Wherever Found in Contiguous U.S. There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/3652	Threatened
Northern Long-eared Bat *Myotis septentrionalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Threatened

INSECTS

NAME	STATUS
Monarch Butterfly *Danaus plexippus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

CRITICAL HABITATS

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

IPAC USER CONTACT INFORMATION

Agency: Sevee & Maher Engineers, Inc.
Name: Anthony Pais
Address: 4 Blanchard Road
City: Cumberland
State: ME
Zip: 04021
Email aep@smemaine.com
Phone: 2078295016

United States Department of the Interior

FISH AND WILDLIFE SERVICE
New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
Phone: (603) 223-2541 Fax: (603) 223-0104

In Reply Refer To: March 30, 2023
Project code: 2023-0059266
Project Name: Riverside Hydroelectric Facility Endangered Species Act Certification
IPaC Record Locator: 979-124385837

Federal Nexus: yes
Federal Action Agency (if applicable): Environmental Protection Agency

Subject: Technical assistance for 'Riverside Hydroelectric Facility Endangered Species Act Certification'

Dear Anthony Pais:

This letter records your determination using the Information for Planning and Consultation (IPaC) system provided to the U.S. Fish and Wildlife Service (Service) on March 30, 2023, for “Riverside Hydroelectric Facility Endangered Species Act Certification” (here forward, Project). This project has been assigned Project Code 2023-0059266 and all future correspondence should clearly reference this number.

The Service developed the IPaC system and associated species’ determination keys in accordance with the Endangered Species Act of 1973 (ESA; 87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.) and based on a standing analysis. All information submitted by the Project proponent into the IPaC must accurately represent the full scope and details of the Project. Failure to accurately represent or implement the Project as detailed in IPaC or the Northeast Determination Key (Dkey), invalidates this letter. To make a no effect determination, the full scope of the proposed project implementation (action) should not have any effects (either positive or negative effect(s)), to a federally listed species or designated critical habitat.

Effects of the action are all consequences to listed species or critical habitat that are caused by the proposed action, including the consequences of other activities that are caused by the proposed action. A consequence is caused by the proposed action if it would not occur but for the proposed action and it is reasonably certain to occur. Effects of the action may occur later in time and may include consequences occurring outside the immediate area involved in the action. (See § 402.17). Under Section 7 of the ESA, if a federal action agency makes a no effect determination, no further consultation with, or concurrence from, the Service is required (ESA §7). If a proposed Federal action may affect a listed species or designated critical habitat, formal

consultation is required (except when the Service concurs, in writing, that a proposed action "is not likely to adversely affect (NLAA)" listed species or designated critical habitat [50 CFR §402.02, 50 CFR§402.13]).

The IPaC results indicated the following species is (are) potentially present in your project area and, based on your responses to the Service's Northeast DKey, you determined the proposed Project will have the following effect determinations:

Species	Listing Status	Determination
Canada Lynx (*Lynx canadensis*)	Threatened	NLAA

Conclusion

Coordination with the Service is not complete. The project has a federal nexus (e.g., funds, permits); however, you are not the federal action agency. Therefore, the ESA consultation status is incomplete and no project activities on any portion of the parcel should occur until consultation between the Service and the Federal action agency (or designated non-federal representative), is completed. Section 7 consultation is not complete until the federal action agency submits a determination of effects, and the Service concurs with the federal action agency's determination. Please provide this technical assistance letter to the lead federal action agency or its designated non-federal representative with a request for its review.

As the federal agency deems appropriate, they should submit their determination of effects to the appropriate Ecological Services Field Office. The lead federal action agency or designated non-federal representative can log into IPaC system using their agency email account and click "Search by record locator" to find this Project using 979-124385837.

In addition to the species listed above, the following species and/or critical habitats may also occur in your project area and are not covered by this conclusion:

- Monarch Butterfly *Danaus plexippus* Candidate
- Northern Long-eared Bat *Myotis septentrionalis* Threatened

To complete consultation for species that have reached a "May Affect" determination and/or species may occur in your project area and are not covered by this conclusion, please visit the "New England Field Office Endangered Species Project Review and Consultation" website for step-by-step instructions on how to consider effects on these listed species and/or critical habitats, avoid and minimize potential adverse effects, and prepare and submit a project review package if necessary: https://www.fws.gov/office/new-england-ecological-services/endangered-species-project-review

If no changes occur with the Project or there are no updates on listed species, no further consultation/coordination for this project is required for the species identified above. However, the Service recommends that project proponents re-evaluate the Project in IPaC if: 1) the scope, timing, duration, or location of the Project changes (includes any project changes or

amendments); 2) new information reveals the Project may impact (positively or negatively) federally listed species or designated critical habitat; or 3) a new species is listed, or critical habitat designated. If any of the above conditions occurs, additional consultation with the Service should take place before project implements any changes which are final or commits additional resources.

Please Note: If the Action may impact bald or golden eagles, additional coordination with the Service under the Bald and Golden Eagle Protection Act (BGEPA) (54 Stat. 250, as amended, 16 U.S.C. 668a-d) by the prospective permittee may be required. Please contact the Migratory Birds Permit Office, (413) 253-8643, or PermitsR5MB@fws.gov, with any questions regarding potential impacts to Eagles.

If you have any questions regarding this letter or need further assistance, please contact the New England Ecological Services Field Office and reference the Project Code associated with this Project.

Action Description
You provided to IPaC the following name and description for the subject Action.

1. Name

Riverside Hydroelectric Facility Endangered Species Act Certification

2. Description

The following description was provided for the project 'Riverside Hydroelectric Facility Endangered Species Act Certification':

> The Riverside Hydroelectric Facility is required to undergo an endangered species act certification as part of the notice of intent (NOI) renewal associated with the 2023 NPDES General Permit for Hydroelectric Generating Facilities (NHG360000).

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@44.473883099999995,-71.1698243071273,14z

QUALIFICATION INTERVIEW

1. As a representative of this project, do you agree that all items submitted represent the complete scope of the project details and you will answer questions truthfully?

   Yes

2. Does the proposed project include, or is it reasonably certain to cause, intentional take of listed species?

   Note: This question could refer to research, direct species management, surveys, and/or studies that include intentional handling/encountering, harassment, collection, or capturing of any individual of a federally listed threatened, endangered, or proposed species.

   No

3. Is the action authorized, permitted, licensed, funded, or being carried out by a Federal agency in whole or in part?

   Yes

4. Is the Federal Highway Administration (FHWA), Federal Railroad Administration (FRA), or Federal Transit Administration (FTA) the lead agency for this project?

   No

5. Are you including in this analysis all impacts to federally listed species that may result from the entirety of the project (not just the activities under federal jurisdiction)?

   Note: If there are project activities that will impact listed species that are considered to be outside of the jurisdiction of the federal action agency submitting this key, contact your local Ecological Services Field Office to determine whether it is appropriate to use this key. If your Ecological Services Field Office agrees that impacts to listed species that are outside the federal action agency's jurisdiction will be addressed through a separate process, you can answer yes to this question and continue through the key.

   Yes

6. Are you the lead federal action agency or designated non-federal representative requesting concurrence on behalf of the lead Federal Action Agency?

   No

7. Will the proposed project involve the use of herbicide?

   No

8. Are there any caves or anthropogenic features suitable for hibernating or roosting bats within the area expected to be impacted by the project?

   No

9. Does any componentof the project associated with this action include structures that may pose a collision risk to birds or bats (e.g., wind turbines, communication towers, transmission lines, any type of towers with or without guy wires)?

   NoteFor federal actions, answer ‘yes’ if the construction or operation of wind power facilities is either (1) part of the federal action or (2) would not occur but for a federal agency action (federal permit, funding, etc.).

   Yes

10. Will the proposed project result in permanent changes to water quantity in a stream or temporary changes that would be sufficient to result in impacts to listed species?

    For example, will the proposed project include any activities that would alter stream flow, such as water withdrawal, hydropower energy production, impoundments, intake structures, diversion structures, and/or turbines? Projects that include temporary and limited water reductions that will not displace listed species or appreciably change water availability for listed species (e.g. listed species will experience no changes to feeding, breeding or sheltering) can answer "No". Note: This question refers only to the amount of water present in a stream, other water quality factors, including sedimentation and turbidity, will be addressed in following questions.

    Yes

11. Will the proposed project affect wetlands?

    This includes, for example, project activities within wetlands, project activities within 300 feet of wetlands that may have impacts on wetlands, water withdrawals and/or discharge of contaminants (even with a NPDES).

    No

12. Will the proposed project activities (including upland project activities) occur within 0.5 miles of the water's edge of a stream or tributary of a stream where listed species may be present?

    Yes

13. Will the proposed project directly affect a streambed (below ordinary high water mark (OHWM)) of the stream or tributary?

    No

14. Will the proposed project bore underneath (directional bore or horizontal directional drill) a stream?

    No

15. Will the proposed project involve a new point source discharge into a stream or change an existing point source discharge (e.g., outfalls; leachate ponds)?

    No

16. Will the proposed project involve the removal of excess sediment or debris, dredging or in-stream gravel mining?

    No

17. Will the proposed project involve the creation of a new water-borne contaminant source?

    Note New water-borne contaminant sources occur through improper storage, usage, or creation of chemicals. For example: leachate ponds and pits containing chemicals that are not NSF/ANSI 60 compliant have contaminated waterways. Sedimentation will be addressed in a separate question.

    No

18. Will the proposed project involve perennial stream loss that would require an individual permit under 404 of the Clean Water Act?

    No

19. Will the proposed project involve blasting?

    No

20. Will the proposed project include activities that could result in an increase to recreational fishing or potentially affect fish movement temporarily or permanently (including fish stocking, harvesting, or creation of barriers to fish passage)?

    Yes

21. Will the proposed project involve earth moving that could cause erosion and sedimentation, and/or contamination along a stream?

    NoteAnswer "Yes" to this question if erosion and sediment control measures will be used to protect the stream.

    No

22. Will the proposed project involve vegetation removal within 200 feet of a perennial stream bank?

    No

23. Will erosion and sedimentation control Best Management Practices (BMPs) associated with applicable state and/or Federal permits, be applied to the project? If BMPs have been provided by and/or coordinated with and approved by the appropriate Ecological Services Field Office, answer "Yes" to this question.

    No

24. [Semantic] Does the project intersect the Virginia big-eared bat critical habitat?

    Automatically answered
    No

25. [Semantic] Does the project intersect the Indiana bat critical habitat?

    Automatically answered
    No

26. [Hidden Semantic] Does the project intersect the Canada lynx AOI?

    Automatically answered
    Yes

27. Will the project involve trapping, poisoning, or broadcasting disease control agents for wild animals (e.g. animal damage control, controlling or managing furbearer wildlife, capturing animals for research projects, rabies baits)?

    No

28. Will the project be enclosed by fencing that could unintentionally trap lynx (e.g. wind and solar development, waste treatment settling ponds, impervious fencing along roads)?

    No

29. Is this a road or highway project?

    No

30. Is the project in a non-forested habitat (fields, towns and urban areas, agricultural fields) and of a nature that will not result in take of lynx?

    Yes

31. [Semantic] Does the project intersect the candy darter critical habitat?

    Automatically answered
    No

32. [Semantic] Does the project intersect the diamond darter critical habitat?

    Automatically answered
    No

33. [Semantic] Does the project intersect the Big Sandy crayfish critical habitat?

    Automatically answered
    No

34. [Hidden Semantic] Does the project intersect the Guyandotte River crayfish critical habitat?

    Automatically answered
    No

35. Do you have any other documents that you want to include with this submission?

    No

PROJECT QUESTIONNAIRE

1. Approximately how many acres of trees would the proposed project remove?

   0

2. Approximately how many total acres of disturbance are within the disturbance/ construction limits of the proposed project?

   10

3. Briefly describe the habitat within the construction/disturbance limits of the project site.

   The project involves a hydroelectric facility, including a dam and powerhouse, located on the Androscoggin River.

IPAC USER CONTACT INFORMATION

Agency: Sevee & Maher Engineers, Inc.
Name: Anthony Pais
Address: 4 Blanchard Road
City: Cumberland
State: ME
Zip: 04021
Email aep@smemaine.com
Phone: 2078295016

LEAD AGENCY CONTACT INFORMATION

Lead Agency: Environmental Protection Agency
Name: George Papadopoulos
Email: papadopoulos.george@ep.gov
Phone: 6179181579

United States Department of the Interior

FISH AND WILDLIFE SERVICE
New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
Phone: (603) 223-2541 Fax: (603) 223-0104

In Reply Refer To: March 30, 2023
Project code: 2023-0059266
Project Name: Riverside Hydroelectric Facility Endangered Species Act Certification
IPaC Record Locator: 979-124387050

Federal Nexus: yes
Federal Action Agency (if applicable): Environmental Protection Agency

Subject: Record of project representative's no effect determination for 'Riverside Hydroelectric Facility Endangered Species Act Certification'

Dear Anthony Pais:

This letter records your determination using the Information for Planning and Consultation (IPaC) system provided to the U.S. Fish and Wildlife Service (Service) on March 30, 2023, for 'Riverside Hydroelectric Facility Endangered Species Act Certification' (here forward, Project). This project has been assigned Project Code 2023-0059266 and all future correspondence should clearly reference this number. **Please carefully review this letter.**

Ensuring Accurate Determinations When Using IPaC

The Service developed the IPaC system and associated species' determination keys in accordance with the Endangered Species Act of 1973 (ESA; 87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.) and based on a standing analysis. All information submitted by the Project proponent into the IPaC must accurately represent the full scope and details of the Project. Failure to accurately represent or implement the Project as detailed in IPaC or the Northern Long-eared Bat Rangewide Determination Key (Dkey), invalidates this letter.

Determination for the Northern Long-Eared Bat

Based upon your IPaC submission and a standing analysis, your project has reached the determination of "No Effect" on the northern long-eared bat. To make a no effect determination, the full scope of the proposed project implementation (action) should not have any effects (either positive or negative), to a federally listed species or designated critical habitat. Effects of the action are all consequences to listed species or critical habitat that are caused by the proposed action, including the consequences of other activities that are caused by the proposed action. A consequence is caused by the proposed action if it would not occur but for the proposed action

and it is reasonably certain to occur. Effects of the action may occur later in time and may include consequences occurring outside the immediate area involved in the action. (See § 402.17).

Under Section 7 of the ESA, if a federal action agency makes a no effect determination, no consultation with the Service is required (ESA §7). If a proposed Federal action may affect a listed species or designated critical habitat, formal consultation is required except when the Service concurs, in writing, that a proposed action "is not likely to adversely affect" listed species or designated critical habitat [50 CFR §402.02, 50 CFR§402.13].

Other Species and Critical Habitat that May be Present in the Action Area

The IPaC-assisted determination for the northern long-eared bat does not apply to the following ESA-protected species and/or critical habitat that also may occur in your Action area:

- Canada Lynx *Lynx canadensis* Threatened
- Monarch Butterfly *Danaus plexippus* Candidate

You may coordinate with our Office to determine whether the Action may affect the animal species listed above and, if so, how they may be affected.

Next Steps

Based upon your IPaC submission, your project has reached the determination of “No Effect” on the northern long-eared bat. If there are no updates on listed species, no further consultation/ coordination for this project is required with respect to the northern long-eared bat. However, the Service recommends that project proponents re-evaluate the Project in IPaC if: 1) the scope, timing, duration, or location of the Project changes (includes any project changes or amendments); 2) new information reveals the Project may impact (positively or negatively) federally listed species or designated critical habitat; or 3) a new species is listed, or critical habitat designated. If any of the above conditions occurs, additional coordination with the Service should take place to ensure compliance with the Act.

If you have any questions regarding this letter or need further assistance, please contact the New England Ecological Services Field Office and reference Project Code 2023-0059266 associated with this Project.

Action Description
You provided to IPaC the following name and description for the subject Action.

1. Name

Riverside Hydroelectric Facility Endangered Species Act Certification

2. Description

The following description was provided for the project 'Riverside Hydroelectric Facility Endangered Species Act Certification':

> The Riverside Hydroelectric Facility is required to undergo an endangered species act certification as part of the notice of intent (NOI) renewal associated with the 2023 NPDES General Permit for Hydroelectric Generating Facilities (NHG360000).

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@44.473883099999995,-71.1698243071273,14z

DETERMINATION KEY RESULT

Based on the information you provided, you have determined that the Proposed Action will have no effect on the Endangered northern long-eared bat (Myotis septentrionalis). Therefore, no consultation with the U.S. Fish and Wildlife Service pursuant to Section 7(a)(2) of the Endangered Species Act of 1973 (87 Stat. 884, as amended 16 U.S.C. 1531 *et seq.*) is required for those species.

QUALIFICATION INTERVIEW

1. Does the proposed project include, or is it reasonably certain to cause, intentional take of the northern long-eared bat or any other listed species?

   Note: Intentional take is defined as take that is the intended result of a project. Intentional take could refer to research, direct species management, surveys, and/or studies that include intentional handling/encountering, harassment, collection, or capturing of any individual of a federally listed threatened, endangered or proposed species?

   No

2. Do you have post-white nose syndrome occurrence data that indicates that northern long-eared bats (NLEB) present in the action area? Bat occurrence data may include identification of NLEBs in hibernacula, capture of NLEBs, tracking of NLEBs to roost trees, or confirmed acoustic detections.

   No

3. Does any component of the action involve construction or operation of wind turbines?

   Note: For federal actions, answer ‘yes’ if the construction or operation of wind power facilities is either (1) part of the federal action or (2) would not occur but for a federal agency action (federal permit, funding, etc.).

   No

4. Is the proposed action authorized, permitted, licensed, funded, or being carried out by a Federal agency in whole or in part?

   Yes

5. Is the Federal Highway Administration (FHWA), Federal Railroad Administration (FRA), or Federal Transit Administration (FTA) funding or authorizing the proposed action, in whole or in part?

   No

6. Are you an employee of the federal action agency or have you been officially designated in writing by the agency as its designated non-federal representative for the purposes of Endangered Species Act Section 7 informal consultation per 50 CFR § 402.08?

   Note: This key may be used for federal actions and for non-federal actions to facilitate section 7 consultation and to help determine whether an incidental take permit may be needed, respectively. This question is for information purposes only.

   No

7. Is the lead federal action agency the Environmental Protection Agency (EPA) or Federal Communications Commission (FCC)? Is the Environmental Protection Agency (EPA) or Federal Communications Commission (FCC) funding or authorizing the proposed action, in whole or in part?

   Yes

8. Have you determined that your proposed action will have no effect on the northern long-eared bat? Remember to consider the effects of any activities that would not occur but for the proposed action.

   If you think that the northern long-eared bat may be affected by your project or if you would like assistance in deciding, answer “No” below and continue through the key. If you have determined that the northern long-eared bat does not occur in your project’s action area and/or that your project will have no effects whatsoever on the species despite the potential for it to occur in the action area, you may make a “no effect” determination for the northern long-eared bat.

   Note: Federal agencies (or their designated non-federal representatives) must consult with USFWS on federal agency actions that may affect listed species [50 CFR 402.14(a)]. Consultation is not required for actions that will not affect listed species or critical habitat. Therefore, this determination key will not provide a consistency or verification letter for actions that will not affect listed species. If you believe that the northern long-eared bat may be affected by your project or if you would like assistance in deciding, please answer “No” and continue through the key. Remember that this key addresses only effects to the northern long-eared bat. Consultation with USFWS would be required if your action may affect another listed species or critical habitat. The definition of Effects of the Action can be found here: https://www.fws.gov/media/northern-long-eared-bat-assisted-determination-key-selected-definitions

   Yes

PROJECT QUESTIONNAIRE

Will all project activities by completed by April 1, 2024?

No

IPAC USER CONTACT INFORMATION

Agency: Sevee & Maher Engineers, Inc.
Name: Anthony Pais
Address: 4 Blanchard Road
City: Cumberland
State: ME
Zip: 04021
Email aep@smemaine.com
Phone: 2078295016

LEAD AGENCY CONTACT INFORMATION

Lead Agency: Environmental Protection Agency
Name: George Papadopoulos
Email: papadopoulos.george@ep.gov
Phone: 6179181579

NOI ATTACHMENT 7

NATIONAL REGISTER OF HISTORIC PLACES REVIEW

SME
SEVEE & MAHER
ENGINEERS

SME
SEVEE & MAHER
ENGINEERS

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Tel: 207.829.5016 • Fax: 207.829.5692
info@smemaine.com
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June 8, 2023

U.S. Environmental Protection Agency, Region 1
ATTN: George Papadopoulos, HYDROGP Coordinator
5 Post Office Square – Mailcode 06-1
Boston, MA 02109-3912

Email: Hydro.GeneralPermit@epa.gov

Subject: Riverside Hydroelectric Facility – National Register of Historic Places Review

Dear Mr. Papadopoulos:

As requested within Section F of the Hydroelectric Generating Facilities General Permit (Hydro GP) notice of intent (NOI), Sevee & Maher Engineers, Inc. (SME) has completed a review of the National Register of Historic Places near the Riverside Hydroelectric facility located at 380 Main Street in Berlin, NH on behalf of Brookfield Renewable Great Lakes Hydro America, LLC. As a result of this review, it was determined that there was one historic property present within the vicinity of the Riverside facility: St. Anne Church (Property ID 79000197). While St. Anne Church is within 500 feet of the facility, all discharges and related activities from the facility are unlikely to impact this historic property. Additionally, there are no planned construction or demolition projects at the facility that could reasonably impact the St. Anne Church; therefore, the facility should remain eligible for coverage under the Hydro GP in accordance with Criterion B.

Should questions arise or additional information be desired, please do not hesitate to contact me at 207.829.5016.

Sincerely,

SEVEE & MAHER ENGINEERS, INC.

Philip H. Gerhardt, P.E.
Principal/Senior Environmental Engineer

Attachments: 1. National Register of Historic Places Overhead

ATTACHMENT 1

NATIONAL REGISTER OF HISTORIC PLACES OVERHEAD

SME
SEVEE & MAHER
ENGINEERS

National Register of Historic Places

National Park Service
U.S. Department of the Interior

Public, non-restricted data depicting National Register spatial data processed by the Cultural Resources GIS facility. …