



United States Department of the Interior
OFFICE OF THE SECRETARY
Office of Environmental Policy and Compliance
5 Post Office Square, Suite 18011
Boston, MA 02109

May 22, 2023

4111

IN REPLY REFER TO:
ER 23/0114

Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street, N.E.
Washington, DC 20426

**Subject: Green Lake Hydroelectric Project, FERC No. 7189-014
Green Lake Water Power Company
Green Lake and Reeds Brook, Hancock County, Maine
COMMENTS, RECOMMENDATIONS, PRELIMINARY TERMS AND
CONDITIONS, AND PRELIMINARY FISHWAY PRESCRIPTION**

Dear Secretary Bose:

This letter and enclosures provide the U.S. Department of the Interior's (Department) response to the Federal Energy Regulatory Commission's (Commission) Notice of Application Ready for Environmental Analysis, issued on March 23, 2023, for the Green Lake Hydroelectric Project (Project), which is owned and operated by the Green Lake Water Power Company (GLWP). The Project is located on Green Lake and Reeds Brook in Hancock County, Maine. These comments have been prepared by the Department's U.S. Fish and Wildlife Service (Service) and are submitted in accordance with provisions of the Fish and Wildlife Coordination Act, as amended (16 U.S.C. 661-667e); the National Environmental Policy Act, as amended (42 U.S.C. 4321-4347); the Federal Power Act, as amended (16 U.S.C. 791a-828c), and Endangered Species Act of 1973 (ESA), as amended (16 U.S.C. 1531 et seq.).

BACKGROUND

The Department, through the U.S. Fish and Wildlife Service previously commented on the Pre-Application Document and Scoping Document 1, Initial Study Report, and Draft License Application for this proceeding by letters dated July 24, 2019; April 8, 2021; and January 24, 2022. Service staff attended a Project site visit on June 26, 2019, and a Project scoping meeting held on July 27, 2019.

PROJECT PROPOSAL

The Green Lake Project consists of a 270-foot-long concrete, dry stone, timber and sheet steel dam with a maximum height of 7.5 feet with a 22-foot-long concrete gravity gate section containing two lift gates, an intake structure and three spillway sections; a 1,740-foot-long penstock, which includes reinforced concrete and wood stave sections, connects the intake

structure to the powerhouse. The Project impounds Green Lake with a surface area of approximately 2,989 acres and a usable storage capacity of approximately 10,000-acre feet. The Project uses up to 3.2 feet of drawdown on Green Lake corresponding to drawing the lake down from a full level of 160.7 National Geodetic Vertical Datum of 1929 to a minimum level of 157.5 feet. During the summer season, from June 1 to Labor Day, recreational uses of the lake are given priority. During this season the maximum level of 160.7 remains the same, but the minimum level is increased to 159.7. The Licensee is required to maintain 1 cubic feet per second (cfs) of flow in Reeds Brook.

The Licensee proposes no changes to the existing facilities, although the Licensee has proposed to repair or replace the existing penstock pending a new license. The Licensee proposes no changes to current operations. The Licensee is proposing downstream American eel passage and is not proposing changes for any other aquatic resources.

COMMENTS

The Green Lake National Fish Hatchery (NFH) was authorized by Congress in 1967 for the propagation of Atlantic salmon for Maine and other New England states. Today, Green Lake NFH continues to propagate Atlantic salmon to recover the Gulf of Maine Distinct Population Segment of endangered Atlantic salmon. Green Lake is the water source for Green Lake NFH. The protection of Green Lake NFH's water supply is as important today, if not more, as it was in 1984. The Department is also committed to supporting stakeholders and the use of Green Lake.

RECOMMENDATIONS, MANDATORY TERMS AND CONDITIONS, AND PRESCRIPTIONS

A. Section 4(e) Reservation of Authority

The Department reserves the authority of the Secretary of the Interior to require changes in, and to, the Project and its operation through revision of our Section 4(e) conditions and to modify these conditions, if necessary, to respond to any changes that warrant a revision at the Project (Enclosure I, Section 4).

B. Section 4(e) Preliminary Mandatory Terms and Conditions

To allow for the protection and utilization of the Green Lake National Fish Hatchery, the Department requests that the Commission include the Preliminary Federal Power Act Section 4(e) terms and conditions for the Green Lake Hydroelectric Project contained in Enclosure I in any license it may issue for Project.

C. Section 18 Reservation of Authority

In order to allow for the timely implementation of fishways, including effectiveness measures, the Department requests that the Commission include the following condition in any license it may issue for the Green Lake Hydroelectric Project:

Authority is hereby reserved to the Federal Energy Regulatory Commission to require the Licensee to construct, operate, and maintain such fishways as may be prescribed during the term of this license by the Secretary of the Interior pursuant to Section 18 of the Federal Power Act.

D. Section 18 Preliminary Mandatory Terms and Conditions for Fishway

The Department, through the U.S. Fish and Wildlife Service, is preliminarily prescribing, pursuant to Section 18 of the Federal Power Act, 16 U.S.C., Section 811, that such new fishways be designed, constructed, operated, and maintained for the Green Lake Hydroelectric Project as are necessary to accomplish safe, timely, and effective upstream passage and downstream passage of American eel, and such measures be taken as are necessary to ensure the effectiveness of those fishways during the term of the license.

Enclosure II provides the details of our preliminary prescription, including procedural instructions concerning where and how to file comments, requests for trial-type hearings, and proposed alternative prescriptions.

E. Section 10(j) Recommendations

Pursuant to Section 10(j) of the Federal Power Act, as amended, and the Fish and Wildlife Coordination Act, the Department recommends that the following articles for the protection, mitigation, and enhancement of fish and wildlife resources be included in any license the Commission issues for this Project.

1. The Department recommends that the Licensee implement a protocol to avoid adverse effects on the northern long-eared bat. The Licensee shall implement a time-of-year restriction of April 15 to October 1, for tree clearing activities associated with the operation or maintenance of the Green Lake Hydroelectric Project. This time-of-year restriction does not apply under public safety or other emergencies. In those instances, the Licensee shall notify the U.S. Fish and Wildlife Service within two business days of the unplanned safety/emergency action and provide details of the action and response. Planned tree removal activities may occur between April 15 and October 31. However, to ensure adverse effects to the northern long-eared bat are avoided, the applicant must first determine the species is not present by conducting protocol-level surveys. In this circumstance, the Licensee shall first consult with the U.S. Fish and Wildlife Service regarding appropriate survey methods and avoidance measures.

F. Section 10(a) Recommendations

The Department of the Interior requests that the Federal Energy Regulatory Commission include in any license that may be issued for this Project the following:

1. The Licensee shall serve, prior to or at the time of filing with the Federal Energy Regulatory Commission, all representatives of the Department of the Interior on the service list, with a copy of any request the Licensee may file for amendment of license,

amendment or appeal of any fish and wildlife-related license conditions or extension of time requests for project construction or implementation of license article provisions.


2. The Department recommends, prior to implementing any activities that may affect a federally listed threatened or endangered species in a manner not previously considered in this proceeding, the Licensee petitions the Commission to consult with the U.S. Fish and Wildlife Service or the National Marine Fisheries Service, as appropriate, pursuant to Section 7 of the Endangered Species Act and 50 C.F.R Part 402. Furthermore, if any of the conditions occur as set forth at 50 C.F.R. § 402.16(a) requiring re-initiation of consultation, the Department recommends the Licensee petition the Commission to re-initiate Section 7 consultation with the U.S. Fish and Wildlife Service or National Marine Fisheries Service, as appropriate. Should the Commission decline to initiate or re-initiate consultation, the Licensee will engage with the U.S. Fish and Wildlife Service or the National Marine Fisheries Service, as appropriate, pursuant to Section 10 of the Endangered Species Act regarding effects to federally listed threatened or endangered species. The Department recommends the Licensee ensure that any required consultation is completed prior to initiating any activities that may affect a listed species in a manner not previously considered in this proceeding.

Thank you for the opportunity to review and comment on this application. If you have any questions regarding these comments, please contact Oliver Cox at oliver_cox@fws.gov. Please contact me at andrew_raddant@ios.doi.gov or (617) 223-8565 if I can be of further assistance.

Sincerely,

**ANDREW
RADDANT**

Andrew L. Raddant
Regional Environmental Officer

 Digitally signed by ANDREW
RADDANT
Date: 2023.05.22 09:34:52 -04'00'

Enclosures

Electronic distribution: <https://ferconline.ferc.gov/FERCOOnline.aspx>

cc: FERC Service List

TABLE OF CONTENTS

1. INTRODUCTION 1

2. ADMINISTRATIVE PROCESS, HEARING RIGHTS, AND SUBMISSION OF ALTERNATIVES..... 1

3. PRELIMINARY MANDATORY CONDITIONS..... 2

 3.1. LICENSED PROJECT DEVELOPMENT AGREEMENT 2

 3.2. HATCHERY WATER SUPPLY AND MINIMUM STREAM FLOW 3

 3.3. APPROVAL OF PROJECT STRUCTURES AND MODIFICATIONS 4

 3.4. WOOD-STAVE PENSTOCK..... 4

 3.5. CONCRETE TRANSITION BLOCK..... 5

 3.6. INTERIM PENSTOCK MAINTENANCE PLAN 6

4. RESERVATION OF AUTHORITY 6

5. REFERENCES CITED..... 7

UNITED STATES DEPARTMENT OF THE INTERIOR
DECISION DOCUMENT
PRELIMINARY MANDATORY CONDITIONS PURSUANT TO
SECTION 4(e) OF THE FEDERAL POWER ACT

1. INTRODUCTION

On March 31, 2022, Green Lake Water Power Company (Applicant or Licensee) filed an Application for a New License for a Minor Project (FLA) for the Green Lake Hydroelectric Project (Project; FERC No. 7189). On March 23, 2023, the Federal Energy Regulatory Commission (Commission) issued its Notice of Application Accepted for Filing, Soliciting Motions to Intervene and Protests, Ready for Environmental Analysis, and Soliciting Comments, Recommendations, Preliminary Terms and Conditions, and Preliminary Fishway Prescriptions. In response, the United States Department of the Interior (Department) hereby submits its Preliminary Mandatory Conditions for the Project, pursuant to Section 4(e) of the Federal Power Act (FPA), as amended. These Preliminary Conditions are submitted with a supporting administrative record, as applicable.

The Department developed its Preliminary Mandatory Conditions through a review process that included consultation with the Green Lake National Fish Hatchery (NFH or Hatchery), United States Fish and Wildlife Service (Service).

2. ADMINISTRATIVE PROCESS, HEARING RIGHTS, AND SUBMISSION OF ALTERNATIVES

These Preliminary Mandatory Conditions were prepared, and will be processed, in accordance with the Department's regulations at 43 Code of Federal Regulations (C.F.R.) Part 45. These regulations provide that any party to a license proceeding before the Commission in which the Department exercises mandatory authority is provided both the right to trial-type hearings on issues of material fact and the opportunity to propose alternatives to the terms contained in the Preliminary Mandatory Conditions.

The Department hereby provides notice that any party to the relicensing process before the Commission may request a trial-type hearing on any issue of fact material to these Preliminary Conditions pursuant to, and in conformance with, the regulations of the Department at 43 C.F.R. §45.21. Such a request for a trial-type hearing must be filed with the Office of Environmental Policy and Compliance, Department of the Interior, 1849 C Street, NW, Mail Stop 2629, Washington, DC 20240, within 30 days of the filing of this document with the Commission. Should any request for trial-type hearing be filed, other parties may file interventions and responses thereto within 20 days of the date of service of the request for a hearing 43 C.F.R.

§45.22. Trial-type hearings will be conducted, and a Modified Prescription developed, in accordance with the terms and time limits of 43 C.F.R. Part 45.

The Department further provides notice that any party to the license application process before the Commission may submit alternatives to the terms contained in the Preliminary Mandatory Conditions by filing them pursuant to, and in conformance with, the Department's regulations at 43 C.F.R. §45.71. Any such alternative proposals must be filed with the Office of Environmental Policy and Compliance, Department of the Interior, 1849 C Street, NW, Mail Stop 2629, Washington, DC 20240, within 30 days of the date of the submission of this document to the Commission. Such alternative proposals will be analyzed in accordance with 43 C.F.R. §45.73.

Finally, the Department will accept and consider any comments on the Preliminary Mandatory Conditions filed by any member of the public, state or Federal agency, Tribe, the Applicant, or other entity or person. Comments are due within 30 days of these Preliminary Conditions being filed with the Commission, and should be sent to:

Amanda S. Cross, Project Leader
Maine Field Office
P.O. Box A
306 Hatchery Road
East Orland, Maine 04431
email: amanda_cross@fws.gov

If no hearing is requested or alternative submitted, the Department will finalize its Preliminary Mandatory Conditions, with accompanying analysis, within 60 days of the close of FERC's National Environmental Policy Act comment period, 43 C.F.R. §45.73.

3. PRELIMINARY MANDATORY CONDITIONS

The Commission's Standard Form L-05 issuing License, cover those general requirements that the Department, acting by and through the United States Fish and Wildlife Service, considers necessary for adequate protection of Green Lake NFH and utilization of the land and related resources. Under authority of section 4(e) of the FPA (16 U.S.C. 797(e)), the following additional terms and conditions are deemed necessary for adequate protection and utilization of Green Lake NFH. Therefore, pursuant to section 4(e) of the FPA, the following conditions covering specific requirements for protection and utilization of National Fish Hatchery lands shall also be included in any license issued for the Green Lake Hydroelectric Project (Project; FERC No. 3133).

3.1. Licensed Project Development Agreement

In accordance with Article 32 of the original license (FERC, 1984), the Department and Green Lake Water Power Company entered into an agreement, Licensed Project Development

Agreement, (Agreement; DOI and GLWP, 1984), to coordinate Licensee's plans for access to and construction-related activities on Federal lands administered by the Service for establishment of construction and operation procedures to ensure the protection of Green Lake NFH. Any new license shall include the Agreement Conditions 1(a)(ii), 1(a)(iii), 1(b), 1(c), 2, 3, 12, and 13. The Development Agreement is attached as Appendix A.

3.2. Hatchery Water Supply and Minimum Stream Flow

In Section 2.2.2 of the FLA, the Applicant is proposing to continue to operate the Green Lake Hydroelectric Project as described in Section 2.2.1 of the FLA. The following conditions founded in Ordering Paragraph E, Articles 27, 29, and 30 of the Order Issuing License (Minor), (FERC 1984) and Conditions 1 and 3 of the Licensed Project Development Agreement shall be included in any new license.

1. The Licensee shall release from the Green Lake Project, a continuous minimum flow of 1.0 cubic foot per second (cfs), as measured immediately downstream from the project dam, to maintain aquatic habitat in Reeds Brook, or the inflow to the reservoir, whichever is less, for the protection and enhancement of fish and wildlife resources in Reeds Brook.
2. The Licensee shall provide the Hatchery with up to 30 cfs of water from the penstock on a priority basis at any time.
3. The Licensee shall limit the drawdown of Green Lake for power generation to no lower than 157.5 feet NGVD 29 (4.0 feet on staff gauge). This elevation may be temporarily modified if required by conditions beyond the control of the Licensee, for inspection and maintenance and for short periods upon mutual agreement between the Licensee, the Service, and the Maine Department of Environmental Protection. Furthermore, the Hatchery Manager retains the absolute discretion to restrict the time and duration of any such temporary drawdown, and moreover, retains the absolute discretion to totally deny any such drawdown.
4. The Licensee shall limit the drawdown in order that the lake level remain between 159.7 feet and 160.7 feet NGVD 29 (6.2 feet and 7.2 feet on the staff gauge) between June 1 and Labor Day or a later date¹.
5. The Licensee shall maintain the lake level between 157.5 feet and 160.7 NGVD 29 (4.0 feet and 7.2 feet on the staff gauge) for the remainder of the year.

Justification

The lake water levels specified have allowed for the protection and utilization of the Green Lake NFH water supply. The Hatchery has observed a trend of warmer Green Lake surface water temperatures during the fall (Oliver Cox, personal communication). Warm surface water temperatures require the hatchery to utilize more colder water from the deep intake pipe. As the

¹ The Department notes that postponement of the fall drawdown would not adversely impact Hatchery operations.

lake level is reduced during the fall drawdown so is the Hatchery's ability to utilize the colder water through the deep intake pipe. Maintaining the lake level between 159.7 and 160.7 feet NGVD 29 later into September to accommodate other stakeholders would also benefit the Hatchery by maintaining water pressure through the Hatchery's intake pipes.

3.3. Approval of Project Structures and Modifications

The following conditions founded in Condition 5 of the Licensed Project Development Agreement (Agreement; DOI and GLWP, 1984) shall be included in any new license.

1. Approval of the U.S. Fish and Wildlife Service must be obtained before construction commences. Such approval includes but is not limited to modifications to the design and materials used in the penstock and all other Project structures to be constructed by the Licensee, insofar as such design or materials may affect the Hatchery or any fish and wildlife species under the jurisdiction of the Service. Any such approval of or required modification by the Service shall be provided to the Commission for approval.
2. The Agreement between the Licensee and the Contractor or Contractors who will construct the Project structures shall be submitted to the U.S. Fish and Wildlife Service for approval as provided in paragraph 1 of Section 3.3. This approval, which shall not be unreasonably withheld, must be obtained before construction may proceed on any portion of the project.
3. All construction and maintenance activities planned pursuant to this Section 3.3, must be scheduled so as not to interfere with Hatchery Operations.
4. The Department assumes no liability by virtue of any construction approval or requirement.

Justification

Condition 5 of the Licensed Project Development Agreement has provided for adequate protection of the Hatchery's water supply. The timing of construction and the project structures themselves have the potential to affect the Hatchery's water supply and operation. There are certain times of the year when the hatchery can allow for construction activities that minimize the impact to Hatchery operations and minimize the risk to the hatchery fish.

3.4. Wood-stave Penstock

In section 5.2.5.2 of the FLA Exhibit-E, the Applicant acknowledges that the wood-stave penstock needs replacement or repair. The Department concurs with this statement.

In addition to the provisions of Section 3.3, within 1 year following the effective date of the new license, the Licensee shall develop 90% design plans and submit these plans to the Service for review and approval. Prior to the submission of the 90% design plans, the 30% and 60% design plans should be submitted for review. The Service shall have 30 days to review and comment on

each design drawing stage.

Within 3 years following the effective date of the new license, the Licensee shall have repaired or replaced the wooded section of the penstock.

Justification

The Hatchery utilizes water from three lake elevations to provide appropriate water temperatures and dissolved oxygen levels. The penstock provides the hatchery with water from the surface of the lake. During periods of open water (i.e., when the lake is free of ice cover), surface water provides the hatchery with the warmest water and the greatest amount of dissolved oxygen. This source of surface water is blended with water from the hatchery's deep intake to provide seasonally appropriate fish rearing conditions. A failure of the penstock could lead to loss of water to the hatchery, fish mortality, property damage, and personal injury or death.

On April 11, 2023, Oliver Cox, Green Lake NFH Manager, counted 258 leaks in the penstock that were visible from the access road. Because less than 50% of the wood-stave section of the penstock is visible from the road, the 258 leaks potentially account for less than 50% of leaks due to the current condition of the wood-stave section of penstock.

3.5. Concrete Transition Block

In section 5.2.5.2 of the FLA Exhibit-E, the Applicant acknowledges that the wood-stave penstock needs replacement or repair; however, there is no mention of the concrete transition block that appears to be compromised with cracks (Figure 1).

Within 1 year following the effective date of the new license, the Licensee shall evaluate the soundness of the 8-foot square concrete transition block. This evaluation must be performed by a structural engineer in consultation with the Service. The Licensee shall provide the Service with a copy of the engineering report within 1 year following the effective date of the new license. The Service shall have 30 days to review and comment on the submitted report.

Should the evaluation determine that the concrete transition block needs repair or replacement, within 2 years following the effective date of the new license, the Licensee shall develop 90% design stage plans for review and approval by the Service. Prior to the submission of the 90% design plans, the 30% and 60% design plans should be submitted for review. The Service shall have 30 days to review and comment on each of the design stage plan sets.

Should the engineering evaluation determine that the concrete transition block needs repair or replacement, within 3 years following the effective date of the new license, the Licensee shall have repaired or replaced the concrete transition block of the penstock.

Justification

The 8-foot square concrete transition block at the end of the concrete penstock is cracked, weeps water, and has plant material growing in the cracks (Figure 1). A failure of the concrete transition block could lead to loss of water to the Hatchery, fish mortality, property damage, and personal injury or death.



Figure 1. Penstock concrete transition block, Green Lake Hydro Power Company (P-7189), April 11, 2023.

3.6. Interim Penstock Maintenance Plan

Within 90 days of issuance of a new license, the Licensee shall develop an Interim Penstock Maintenance Plan and submit the plan to the Service for review and approval. The maintenance plan shall detail the maintenance procedures and schedule to maintain the integrity of the penstock and minimize the leaks until the penstock has been replaced or repaired as required in Section 3.4. The Service shall have 30 days to review and comment on the maintenance plan.

Justification

Continued maintenance of the penstock is necessary to slow or prevent further decline of the structure. A failure of penstock could lead to loss of water to the Hatchery, fish mortality, property damage, and personal injury or death.

4. RESERVATION OF AUTHORITY

To accomplish protection and use of National Fish Hatchery lands and resources, the Department

proposes to reserve its authority by requesting that the Commission include the following condition in any license it may issue for the Project:

Pursuant to section 4(e) of the Federal Power Act, the Secretary of the Interior herein exercises their authority under said Act by reserving that authority to require changes in, and to, the Project and its operation through revision of the section 4(e) conditions and to modify these conditions, if necessary, to respond to any changes that warrant a revision at the Green Lake Hydroelectric Project.

5. REFERENCES CITED

FERC. 1984. Order Issuing License (Minor), Green Lake Water Power Company, Project No. 7189-001. 27 FERC ¶ 62, 023. April 5, 1984.

DOI and GLWP. 1984. DOI/Green Lake Water Power Licensed Project Development Agreement as revised. June 4, 1984. (Appendix A).

APPENDIX A

LICENSED PROJECT DEVELOPMENT AGREEMENT

This AGREEMENT is made this 4th day of June, 1984, by and between The United States Department of the Interior ("Interior") and Green Lake Water Power Company (the "Developer"), a corporation organized under the laws of the State of Maine.

In explanation the parties recite the following:

A. Developer has determined that a water power project also known as the Green Lake Water Power Project, (the "Project"), is feasible and has prepared an application for a Minor License to construct, operate, and maintain the Project under the Federal Power Act, 16 U.S.C. §797. Such application was filed with the Federal Energy Regulatory Commission ("FERC") on April 1, 1983, and was docketed as Project No. 7189-000.

B. Project No. 7189 will be located, in most part, on lands owned by the United States of America and administered by the United States Fish and Wildlife Service (the "Fish and Wildlife Service"), an agency of Interior, as a portion of the Green Lake National Fish Hatchery, Ellsworth, Maine (the "Hatchery").

C. Project No. 7189 will require the Developer to purchase an existing dam (the "Green Lake Dam" or the "Dam") owned by the Bangor Hydro-Electric Company ("Bangor Hydro"), which dam impounds the waters of Green Lake.

D. The operation of the Hatchery is dependent on the continuing availability of water in sufficient quantities from Green Lake, which in turn is dependent upon the continued operation and maintenance of the Dam. In addition, the general wildlife, resource and property management responsibilities of Interior create additional interests in the construction, operation and continued maintenance in good repair of the Project.

E. Insofar as the Green Lake Dam is not now operated or maintained specifically to protect the Hatchery's water supply, licensing of Project 7189 consistent with the terms of this Agreement will increase the protections afforded to the Hatchery's water supply.

NOW, THEREFORE, in consideration of the premises and of the mutual agreements contained herein, Interior agrees to allow Developer to construct, operate and maintain a hydroelectric project and appurtenant facilities subject to the following conditions:

1. Hatchery Water Supply. (a) In order to ensure that operation of the Project will not interfere with the ability of the Hatchery to draw water in an amount up to thirty (30) cubic feet per second (cfs) from the Lake at any time, Developer shall cause to be installed at its own expense, and at no expense to Interior in consideration for the right-of-way easement described in Section 8 and for the administrative services which Interior has provided, a 24-inch diameter pipe from the penstock, as shown on Attachment A, with suitable control devices, to supply, along with existing water supply lines, a total of 30 cfs to the Hatchery's filtration plant. This interconnection shall be constructed in such a manner so that the flow in the existing 30-inch supply pipe to the Hatchery remains uninterrupted and unimpaired except for a period as designated by the Hatchery Manager not exceeding 5 days between May 15 and June 15, provided that until said interconnection is operational, Developer shall limit the drawdown of Green Lake to no lower than 4.5 feet on the staff gauge, subject to the further limitation of drawdown between June 1 and September 1 as indicated in Section 1(a)(i) below. Said interconnection shall be utilized as follows:

- i) The Developer shall limit the drawdown of Green Lake for power generation to no lower than 4.0 feet on the staff gauge in compliance with the conditions of Water Qual-

ity Certification issued by the Maine Department of Environmental Protection on July 13, 1983 (see Attachment B), provided that the Developer shall further limit said drawdown in order that the lake level remain between 6.2 feet and 7.2 feet on said staff gauge between June 1 and September 1. The above notwithstanding, the Hatchery Manager may in his discretion permit the temporary drawdown of Green Lake below the limit set forth in this subsection for maintenance purposes upon the request of the Developer and with the express written approval of the Maine Department of Environmental Protection. Notwithstanding the provisions of Section 21 hereof, the Hatchery Manager retains the absolute discretion to restrict the time and duration of any such temporary drawdown, and moreover, retains the absolute discretion to totally deny any such drawdown.

ii) The Developer shall limit power generation if necessary to assure that the proper pressure gradient exists on the penstock to allow water from the penstock tap to be withdrawn at the filtration plant by the Hatchery whenever the Hatchery's priority use of up to 30 cfs is unavailable through its existing water supply lines; provided, however, that the Hatchery shall not draw water through the penstock tap as an alternative to proper, continued maintenance and use of its existing water supply lines.

iii) The pipeline and any valves associated with the penstock tap beyond the valve box, which box is between the concrete penstock and the Hatchery's iron pipeline, shall be constructed and installed solely at Developer's expense, however, the same shall not be considered a part of the project works and shall not be included within the project boundary or any right-of-way easement. Developer shall, at its own expense, maintain the penstock tap up to and including the valve and valve box, but shall not be responsible for maintenance of any part of the penstock tap between the valve box and the Hatchery's filtration plant.

(b) Subject to the provisions of Section 13, at no time will Developer maintain water levels at abnormally high levels so as to pose a threat of damage to Interior land and Hatchery structures.

(c) In the event of any circumstance of force majeure, as defined in Section 13 and subject to the provisions of that section, Developer will use its best efforts to act as promptly as possible to prevent such circumstance, if possible, from affecting Hatchery operations.

2. Dam Maintenance. (a) Subject to applicable state and federal statutes and regulations, Developer shall have responsibility for the maintenance of the Dam, including its maintenance in a safe condition.

(b) The Dam shall be regularly inspected by the Developer or its designee and maintained in a safe condition with the gates, fish screens, intake trash racks, and other appurtenant structures and facilities cleaned and fully operable at all times, as required by the applicable FERC regulations and license conditions, and as required by Interior in accordance with this Agreement.

(c) The Fish and Wildlife Service shall have the right to inspect the dam and project structures affecting Hatchery operations to determine if the ^{operation or} physical condition of the dam or such project structures threaten or are

RSK
[Signature]

adversely affecting Hatchery operations, and if such threats or adverse effects are occurring, to enter and correct, or order Developer to correct, at Developer's expense, such conditions as promptly as possible.

(d) Interior hereby represents and warrants that as of the date of this agreement, Interior (i) has reviewed the operations of the dam and existing related structures insofar as said operations and structures affect Hatchery operations and (ii) there are no known present conditions which adversely affect Hatchery operations except as described on Attachment C to this agreement.

3. Minimum Stream Flow. Developer shall maintain a minimum flow of one (1) cfs, as measured at the toe of Green Lake Dam, in Reeds Brook, an intermittent stream which flows between the Green Lake Dam and the waters of Graham Lake.

4. Emergency Power Connection. (a) The Developer will provide, at its own expense, an appropriate connection at the proposed powerhouse for the transmission of electric power between the proposed powerhouse and the Hatchery, capable of providing emergency electric power to serve the Hatchery if regular commercial sources of electricity are disrupted. The developer will also provide and

maintain, at its own expense, that portion of the underground transmission line to the Hatchery that lies within the proposed project boundary. Interior will provide and maintain, at its own expense, connection and transformer equipment at the hatchery, and that portion of underground transmission line that lies outside the proposed project boundary, provided that nothing in this Agreement shall be interpreted to obligate Interior actually to install or maintain such connection or transformer equipment.

(b) In the event that regular commercial sources of electricity to the Hatchery are disrupted, Developer shall, subject to the provisions of Section 13, supply up to 75 kw of emergency power to the Hatchery, provided that the Hatchery shall take all practicable steps to re-establish its commercial sources of energy as quickly as possible and provided further that Developer shall not be obligated to furnish emergency power in an amount which would impair the integrity of the Project, or require Developer to draw the level of Green Lake below the level specified in Section 1(a), unless Interior expressly authorizes Developer to draw the level of Green Lake below that point, and Developer has received all other necessary governmental approvals. Hatchery shall pay Bangor Hydro for all said emergency power supplied hereunder at a charge to be determined by Interior and Bangor Hydro.

5. Approval of Project Structures. (a) Subject to the provisions of this Section 5, Interior hereby agrees to cooperate to the extent possible with the Developer concerning the proper construction, operation and maintenance of the Project and in any further construction or alterations which Developer may deem necessary, provided that Interior shall have no obligation hereunder to provide manpower, equipment or funds.

(b) Approval of the Regional Director, Region 5, Fish and Wildlife Service, must be obtained before construction commences, provided that the Regional Director may reasonably modify such approval if new information, of which the Regional Director was unaware at the time approval was granted, becomes available. Such approval, which shall not be unreasonably withheld, includes the right of the Regional Director to approve of or require modification to the design and materials used in the penstock and all other Project structures to be constructed by the Developer, insofar as such design or materials may affect the Hatchery or any fish or wildlife species under the jurisdiction of the Fish and Wildlife Service. Any such approval of or required modification by the Regional Director shall be provided to the FERC Regional Engineer who shall be requested to incorporate it into his review of the Developer's plans, specifications, and contract documents.

(c) The Agreement between the Developer and the Contractor or Contractors who will construct the Project structures shall be submitted to the Regional Director for approval as provided in paragraph (b) of this Section. This approval, which shall not be unreasonably withheld, must be obtained before construction may proceed on any portion of the project.

(d) Any and all blasting necessitated by said construction will be conducted on a schedule approved by the Hatchery Manager. All construction activities must be scheduled so as not to interfere with nearby bald eagle feeding during the period April 15 to May 15 of each year.

(e) Interior assumes no liability by virtue of any construction approval or requirement under this Section 5.

6. Indemnification. Subject to the provisions of Section 13, Developer will ^{be responsible for, and further, will} indemnify and hold harmless Interior from and against any and all loss, liability or expense arising out of the construction, operation and maintenance of the Project. ^{Such responsibility to and} ~~Developer's~~ indemnification of Interior ^{by Developer} shall continue and apply beyond the term and termination of this Agreement so long as any of said loss, liability, or expense arose out of the construction, operation or main-

[Handwritten signature]

R. S. W.

9. Access to Project Facilities. (a) Developer and its agents shall be permitted to cross lands of the Hatchery at any time in order to reach any Project structures or facilities for the purpose of operating and maintaining said facilities and for access to the operator's quarters, provided that Developer and its agents shall observe such reasonable security and other measures and precautions to protect Hatchery property, structures, and operations as the Hatchery Manager may establish.

(b) The Contractor or Contractors employed to design, survey, or construct Project structures and facilities shall be allowed reasonable access through the Hatchery to the Project site, subject to the provisions of Section 9(a) and to such reasonable requirements or regulations as the Regional Director may establish pursuant to Section 5.

10. Requirements of Federal Acts. Interior represents that this agreement does not violate or conflict with applicable requirements of the Endangered Species Act (16 U.S.C. §§ 1531 et seq.), the Fish and Wildlife Coordination Act (16 U.S.C. §661), the National Wildlife Refuge Systems Administration Act (16 U.S.C. §668dd), the Federal

Land Policy and Management Act (43 U.S.C. §1701) and the first proviso in Section 4(e) of the Federal Power Act (16 U.S.C. §797(e)).

11. Implementation of Agreement. (a) This agreement, and the Right-of-Way Easement referred to in Section 8, are to be filed with FERC as a supplement to Developer's Application for a License for Project No. 7189.

(b) If any license condition included by the FERC in the license for Project 7189 is inconsistent with the terms of this Agreement or any amendment hereto, or with Interior requirements under Sections 2(c) or 5(b) hereof, the parties to the Agreement shall attempt to resolve the inconsistencies by mutual agreement. Additionally, the Developer may make application for rehearing at the FERC as to the license exclusive of this Agreement, and not as to any terms of this Agreement. In the event that the parties cannot reach agreement or rehearing is denied or does not resolve said inconsistency, Developer shall be under no obligation to accept or retain the license for the Project, provided that Developer's continuing obligations under Sections 6 and 12 hereof shall survive.

(c) In the event that Developer seeks a new license for the Project, this Agreement shall not be inter-

preted to limit in any way the right of Interior to seek to change the terms of this Agreement or to seek new or revised license conditions.

12. Term and Termination. (a) The term of this Agreement shall commence on the date hereof and, except as this Section 12 and Section 6, "Indemnification", create obligations surviving the termination of the Agreement, shall terminate on the termination date of FERC License No. 7189, or the termination date of any new license issued to Developer, or on such earlier termination date pursuant to paragraph (c) of this Section.

(b) If the license term for the Project terminates as provided in Section 12(c) or expires and a new license is not sought for power or nonpower purposes, (i) the Dam shall revert to Bangor Hydro as provided by the terms of the Contract of Sale dated JUNE 1987, between Developer and Bangor Hydro and attached hereto as Attachment E, and (ii) the land conveyed by the Right-of-Way Easement, together with all improvements thereon, shall revert to Interior; provided that upon and in the event of termination or expiration, and reversion to Interior, no compensation for the Project shall be paid by Interior to the Developer; and further provided that upon said reversion to Interior,

Interior may compel Developer to restore the land to its original condition to Interior's satisfaction so far as it is reasonably possible to do so, unless the requirement is waived in writing by the Regional Director, Region 5, U.S. Fish and Wildlife Service.

(c) Except as this Section 12 and Section 6 create obligations surviving the term of this Agreement, this Agreement terminates and is of no force and effect and neither party shall be liable to the other if FERC rejects or denies Developer's application for a license and the rejection or denial becomes final, or if Developer does not accept the license issued by the FERC, or if the license shall be terminated before the termination date provided in the FERC's order issuing license for Project 7189; provided that Developer shall be under no obligation to accept a license for or to develop Project 7189 and shall, consistent with FERC regulations, be free, for any reason and at any time prior to commencing construction of the Project after issuance of the FERC license, to surrender the license, at which time Developer shall be under no obligation under this Agreement or under the Right-of-Way Easement described in Section 8; and provided further that upon any termination after the commencement of construction, Interior may compel Developer to restore the land conveyed by the Right-of-Way

Easement to its original condition to Interior's satisfaction so far as it is reasonably possible to do so, unless the requirement is waived in writing by the Regional Director, Region 5, U.S. Fish and Wildlife Service.

13. Force Majeure. Neither party shall incur any liability in the event and only to the extent that either party's performance is delayed, hindered or frustrated due to circumstances beyond their reasonable control such as, but not limited to, strike, riot, storm, drought, flood, acts of God or the public enemy, acts of the state or county government, acts of the Federal government other than acts of Interior under this Agreement or acts of FERC pertaining explicitly to this Project, fires, pollution or contamination, epidemics, severe weather, or delays of contractor or subcontractors or supplies, and the time or times for performance shall be extended for a period of time equal to the delay caused by the force majeure.

14. Representations by the Service. Interior hereby represents and covenants that

- (a) Interior has the power to enter into the transactions contemplated hereby, and to carry out its obligations under this Agreement, and Interior has taken all necessary action to enter into, execute and deliver this Agreement. This Agreement is legal, valid, binding and enforceable against the Interior and the

Fish and Wildlife Service in accordance with its terms.

- (b) As of the date hereof, Interior's premises are in full compliance with all Federal, state and local laws, codes, ordinances, rules and regulations and the conduct of the project facilities as contemplated in this Agreement will not, in Interior's opinion, violate any Federal, state or local laws, codes, ordinances, rules or regulations.

15. Representations by Developer. Developer hereby represents and covenants that

- (a) Developer has the power to enter into this Agreement and has taken all action necessary to enter into, execute, and deliver this Agreement. This Agreement is legally valid, binding and enforceable against Developer in accordance with its terms.
- (b) The execution, delivery and performance of this Agreement shall not constitute a breach of any agreement to which Developer is a party or of its charter documents.

16. Invalid Provisions. If any provision is held invalid, the remainder of this Agreement shall not be affected thereby if such remainder would then continue to conform to the requirements of applicable laws.

17. Notices. All notices, demands or other communications which may be required shall be deemed given if sent by registered or certified mail, postage prepaid and

addressed as follows or as Developer or Interior shall specify otherwise in writing:

(a) To Developer: Green Lake Water Power Company
P. O. Box 208
Pittsfield, Maine 04967

with a copy to: LeBoeuf, Lamb, Leiby & MacRae
520 Madison Avenue
New York, New York 10022
Attn: Thomas E. Mark

(b) To Interior: Regional Director
U. S. Fish and Wildlife Service
Region 5
Suite 700
One Gateway Center
Newton Corner, Mass. 02158

18. Amendments. This Agreement may be amended only by written document, approved and executed by the parties hereto or their assignees. With the Right-of-Way Easement referred to in Section 8, this Agreement, as implemented by the FERC license for Project 7189, constitutes the entire agreement between the parties and supersedes all prior agreements. The Developer shall not initiate, agree to or accept any change, alteration or amendment of the Project or of the FERC license for Project 7189 without the prior express written approval of Interior.

19. Captions. The captions are inserted for convenience only and do not define or limit the scope of this Agreement.

20. Successors and Assigns. (a) The covenants, conditions and agreements contained in this Agreement shall bind and inure to the benefit of Interior and Developer, and their respective heirs, distributees, executors, administrators, successors and assigns, and approved transferees.

(b) Other than as expressly provided elsewhere herein, no transfer or assignment of this Agreement or of any part thereof or interest therein, directly or indirectly, voluntary or involuntary, shall be made unless such transfer or assignment is first approved by both parties hereto in writing.

21. Consents. Wherever consents or approvals are required, the parties hereby agree that such consents or approvals shall not be unreasonably withheld.

22. Governing Law. The rights and benefits conferred by this Agreement shall be subject to the laws of the United States governing the Fish and Wildlife Service and to the rules and regulations promulgated thereunder, whether now in force or hereafter enacted or provided and nothing herein shall be construed as in any way impairing the general powers of supervision, regulation and control by the Fish and Wildlife Service of property under its ownership or control.

23. Expenditure of Funds. Nothing herein contained shall be construed as binding Interior to expend in any one fiscal year any sum in excess of appropriations made by Congress or administratively allocated for the purpose of this agreement for the fiscal year, or to involve Interior in any contract or other obligation for the further expenditure of money in excess of such appropriations or allocations.

24. Nondiscrimination. During the performance of this Agreement, the parties agree to abide by the terms of Executive Order 11246 on nondiscrimination and will not discriminate against any person because of race, color, religion, sex or national origin. The parties will take affirmative action to ensure that applicants are employed without regard to their race, color, religion, sex or national origin.

25. Parties to Agreement. No member of or delegate to Congress, or resident Commissioner shall be admitted to any share or part of this Agreement, or to any benefit that may arise therefrom; but this provision shall not be construed to extend to this Agreement if made with a corporation for its general benefit.

IN WITNESS WHEREOF, the duly authorized representatives of the parties hereto have executed this agreement as of the day and year first above written.

William E. Knapp
Attest

THE DEPARTMENT OF THE INTERIOR

By: William E. Knapp

Title: Acting Principal Director
U.S. Fish & Wildlife Service

Frank H. Lundy
Attest

GREEN LAKE WATER POWER COMPANY

By: R. Steven Klemm

Title: President

ACKNOWLEDGEMENTS

State of Massachusetts))ss
County of Middlesex)

Date June 4 1984

On this 4th day of June 1984, before me personally appeared William Ashe to me known to be the person described in and who executed the foregoing LICENSED PROJECT DEVELOPMENT AGREEMENT and acknowledged that he executed the same as his free act and deed.

Barclay E. Hoyer
Notary Public

My Commission expires: March 1988

State of Massachusetts)
County of Middlesex) ss)

Date *June 4 1988*

On this *4th* day of *June*, 1984, before me personally appeared *R. Stephen Kleinschmidt* to me known to be the person described in and who executed the foregoing LICENSED PROJECT DEVELOPMENT AGREEMENT and acknowledged that he executed the same as his free act and deed.

Barclay E. Hayes

Notary Public

My Commission expires: *March 1988*

ATTACHMENT C TO
LICENSED PROJECT DEVELOPMENT AGREEMENT

Interior has reviewed the operation of the existing dam and related structures at Green Lake, Hancock County, Maine, and as of the date of this Agreement, the only present conditions which adversely affect Hatchery operations are described below.

1. Bank erosion has occurred in the past in the vicinity of the existing Hatchery water supply valve box near the dam. This has resulted from spillage from a segment of sheet piling at the dam in the vicinity of the existing Hatchery water supply pipelines. This segment of sheet piling has apparently settled since construction, creating a depression in the spillway crest.
2. Rapid drawdown of Green Lake via the existing sluice gate at the dam has caused some bank erosion in Reeds Brook. This condition only occurs if the sluice gates are opened rapidly.

ATTACHMENT D TO
LICENSED PROJECT DEVELOPMENT AGREEMENT

The United States Department of the Interior shall be an additional insured in connection with the Green Lake Water Power Project.

Insurance shall be maintained in the amount of \$2,000,000.00 in 1984 dollars and shall be adjusted every two years in accordance with the Consumer Price Index as determined by the United States Government, and shall cover all such loss, liability, and expense arising out of the construction, operation and maintenance of the said Project, as set forth below:

1. Direct and Consequential Damages to the Green Lake National Fish Hatchery, including structural damage, loss of fish, interference with operations, and other losses as stated below;
2. Bodily Injury and Property Damage;
3. Comprehensive Loss and Liability;
4. Premises and Operations;
5. Products/Completed Operations Hazard;
6. Contracts and Contract Interference;
7. Property Damage and Loss;
8. Independent Contractors;
9. Personal Injury and Death;
10. Automobile Loss and Liability; and
11. Indemnification for the above and for claims arising out of the above.

CONTRACT FOR SALE OF REAL ESTATE

AGREEMENT made June 1, 1984 between Bangor Hydro-Electric Company a Maine corporation with office in Bangor, Maine (the "Seller") and Green Lake Water Power Company a corporation with offices in Pittsfield, Maine (the "Buyer")

1 Seller agrees to sell and convey and Purchaser agrees to purchase, the following described real estate

A certain lot or parcel of land, including any and all water rights associated therewith, situated on Green Lake in Ellsworth, Hancock County, Maine and bounded and described as follows:

Beginning at a spruce tree marked X thirty feet more or less east from the southwest end of the dam at the outlet of Reed's Pond, so-called, thence about south sixty degrees east one hundred feet to an old stump spotted on two sides, thence about north forty degrees east across the stream below the dam and beyond the northeast end of said dam to a rock bearing south twenty-five degrees west from a maple tree spotted on two sides and thirty-three feet distant therefrom, thence about north sixty-five degrees west one hundred fifty-eight feet to a birch tree spotted on three sides and marked X, thence in a straight line across the stream above the dam to the spruce tree, the place of beginning, containing approximately 1 acre, together with the dam standing on said described premises and the right to use and control the waters held by said dam

Attachment "E"

2 The purchase price is \$40,000.00, payable by Seller as follows: \$500.00 deposit upon signing this contract and \$39,500.00 in cash or certified check at closing.

3 The closing shall take place within 60 days from the date of this Agreement, at which time Buyer shall be entitled to possession.

4. Conveyance shall be by quitclaim deed with covenant. Although Seller shall not be required to provide an abstract of title or survey regarding the property, Seller agrees to provide Purchaser with all papers and information it has concerning the property. Should Buyer find the title to be defective, Seller shall have 60 days after notice thereof to remedy the defect, after which time if title is not cured either party may terminate this contract and the parties shall be relieved from all obligations hereunder upon return of said deposit to Buyer.

5. Risk of loss or damage to said premises until closing is assumed by Seller.

6. Taxes for the current taxable year shall be prorated between the parties at closing.

7. Seller's obligation to sell shall be contingent upon there having been executed, prior thereto or continuously therewith, an agreement between the parties hereto (or their nominees) for the sale and purchase of the electric power to be generated as a result of facilities to be developed in the vicinity of the premises by the Buyer (or its nominee).

8. The conveyance shall be subject to the condition that the Seller shall repurchase the premises for \$40,000.00 in the event the facilities referred to in paragraph 7 above are not developed and in operation by December 31, 1984.

9 The Seller shall have and retain the option to repurchase the premises and any improvements thereon in the event the facilities referred to in paragraph 7 above are not operated to produce electric power by the Buyer or its successors or assignees for a period of twelve consecutive months

IN WITNESS WHEREOF, this contract has been duly executed by the parties hereto as of the date first above written.

PURCHASER

Guzen Lake Waterpower Co

By

R. St. Klensig, Pres

SELLER

Bangor Hydro-Electric Company

By

Carroll R. La, Vice President

TABLE OF CONTENTS

1. INTRODUCTION 1

2. ADMINISTRATIVE PROCESS, HEARING RIGHTS, AND SUBMISSION OF ALTERNATIVES..... 1

3. PROJECT OVERVIEW 2

4. RESOURCE DESCRIPTION..... 3

4.1. UNION RIVER..... 3

4.2. FISH OF THE UNION RIVER BASIN 4

4.3. IMPACTS OF DAMS ON FISH MIGRATIONS 5

4.4. AMERICAN EEL 6

4.4.1. AMERICAN EEL BIOLOGY AND LIFE HISTORY 6

4.4.2. IMPACTS TO AMERICAN EEL MIGRATION 8

4.4.3. CURRENT STATUS OF THE AMERICAN EEL POPULATION 8

4.4.4. RESOURCE MANAGEMENT GOALS FOR AMERICAN EEL 8

4.4.5. EXISTING FISH PASSAGE AND RESTORATION EFFORTS FOR AMERICAN EEL 10

4.4.6. ACTIONS NECESSARY TO ACCOMPLISH RESOURCE MANAGEMENT GOALS FOR AMERICAN EEL..... 10

5. FISH PASSAGE ALTERNATIVES PROPOSED BY THE APPLICANT 11

5.1. AMERICAN EEL 11

6. STATUTORY AUTHORITY 11

7. RESERVATION OF AUTHORITY TO PRESCRIBE FISHWAYS 12

8. SECTION 18 PRESCRIPTION FOR FISHWAYS –TERMS AND CONDITIONS 12

8.1. CONDITION 1: REVISION OF SECTION 18 FISHWAY PRESCRIPTION 12

8.2. CONDITION 2: OPERATING PERIODS..... 12

8.3. CONDITION 3: AGENCY ACCESS AND INSPECTION..... 13

8.4. CONDITION 4: MAINTENANCE AND REPAIR 13

8.5. CONDITION 5: FISHWAY OPERATION AND MAINTENANCE PLAN 13

8.6. CONDITION 6: FISHWAY OPERATION AND MAINTENANCE REPORT . 14

8.7. CONDITION 7: DESIGN PLANS..... 14

8.8. CONDITION 9: DOWNSTREAM FISH EXCLUSION 15

8.9. CONDITION 10: TRASHRACK INSPECTION 15

8.10. CONDITION 11: DOWNSTREAM ROUTE OF PASSAGE..... 15

8.11. CONDITION 12: AMERICAN EEL SITING STUDY 15

8.12. CONDITION 13: UPSTREAM AMERICAN EEL PASSAGE..... 16

8.13. CONDITION 15: FISH PASSAGE EFFECTIVENESS STUDY 16

8.14. CONDITION 16: MODIFICATIONS 17

8.15. CONDITION 17: EXCEPTIONS 17

8.16. CONDITION 18: APPROVAL OF EXTENSIONS 17

8.17. CONDITION 19: MITIGATION MEASURES..... 17

9. IMPLEMENTATION SCHEDULE..... 18

| | | |
|-------|---|----|
| 10. | REFERENCES CITED..... | 19 |
| 10.1. | COMPREHENSIVE RESOURCE MANAGEMENT PLANS FILED AT THE COMMISSION..... | 19 |
| 10.2. | INDEX TO THE ADMINISTRATIVE RECORD | 20 |
| 10.3. | OTHER REFERENCES CITED IN THE DECISION DOCUMENT | 23 |

**UNITED STATES DEPARTMENT OF THE INTERIOR
DECISION DOCUMENT
PRELIMINARY PRESCRIPTION FOR FISHWAYS PURSUANT TO
SECTION 18 OF THE FEDERAL POWER ACT**

1. INTRODUCTION

The United States Department of the Interior (Department) hereby submits its Preliminary Prescription for Fishways (Prescription) for the Green Lake Hydroelectric Project (FERC No. 7189) (Project), pursuant to Section 18 of the Federal Power Act (FPA), as amended. The Department is submitting this Prescription to the Federal Energy Regulatory Commission (Commission; FERC) with its supporting administrative record. This Project, owned by Green Lake Water Power Company (Applicant; Licensee), is currently undergoing relicensing before the Commission. The Project is located at Green Lake National Fish Hatchery on Green Lake and Reeds Brook, in Hancock County, Maine.

The Department developed its Prescription for Fishways through a review process that included consultation among fisheries biologists from the Department's U.S. Fish and Wildlife Service (Service; USFWS) and fishway engineers from the Service, the National Oceanic and Atmospheric Administration National Marine Fisheries Service (NOAA-Fisheries), the Maine Department of Marine Resources (MDMR), and the Maine Department of Inland Fisheries and Wildlife (MDIFW).

The Department is also filing an Index to the Administrative Record in this proceeding. The Department has considered the record before the Commission as well as scientific evidence not already included in the record before the Commission or publicly available.

2. ADMINISTRATIVE PROCESS, HEARING RIGHTS, AND SUBMISSION OF ALTERNATIVES

This Prescription was prepared, and will be processed, in accordance with the Department's regulations at 43 Code of Federal Regulations (C.F.R.) Part 45. These regulations provide that any party to a license proceeding before the Commission in which the Department exercises mandatory authority is provided both the right to trial-type hearings on issues of material fact and the opportunity to propose alternatives to the terms contained in the Prescription.

Therefore, the Department hereby provides notice that any party to the license application process before the Commission may request a trial-type hearing on any issue of fact material to this Prescription pursuant to, and in conformance with, the regulations of the Department at 43 C.F.R. §45.21. Such a request for a trial-type hearing must be filed with the Office of Environmental Policy and Compliance, Department of the Interior, 1849 C Street, NW, Mail Stop 2629, Washington, DC 20240, within 30 days of the filing of this document with the

Commission. Should any request for trial-type hearing be filed, other parties may file interventions and responses thereto within 20 days of the date of service of the request for a hearing 43 C.F.R. §45.22. Trial-type hearings will be conducted, and a Modified Fishway Prescription developed, in accordance with the terms and time limits of 43 C.F.R. Part 45.

The Department further provides notice that any party to the license application process before the Commission may submit alternatives to the terms contained in the Prescription by filing them pursuant to, and in conformance with, the Department's regulations at 43 C.F.R. §45.71. Any such alternative proposals must be filed with the Office of Environmental Policy and Compliance, Department of the Interior, 1849 C Street, NW, Mail Stop 2629, Washington, DC 20240, within 30 days of the date of the submission of this document to the Commission.

Finally, the Department will accept and consider any comments on the Prescription filed by any member of the public, state or Federal agency, Tribe, the Applicant, or other entity or person. Comments are due within 30 days of this Prescription being filed with the Commission, and should be sent to:

Amanda Cross, Project Leader
Maine Field Office
U.S. Fish and Wildlife Service
306 Hatchery Road
East Orland, ME 04431
email: Amanda_cross@fws.gov

The Department will submit its Modified Fishway Prescription, with accompanying analysis, within 60 days of the close of FERC's National Environmental Policy Act comment period. 43 C.F.R. §45.73. If no alternative proposals or comments on the Prescription are received by the Department and the Department does not submit a Modified Fishway Prescription within the specified deadline, the Service, on behalf of the Department, will file a letter with the Commission confirming this Prescription as the Modified Fishway Prescription.

3. PROJECT OVERVIEW

The Project is located on Green Lake and Reeds Brook in Hancock County, Maine. The Project is a run-of-river hydroelectric project. The Project is the only dam at the outlet of Green Lake and the powerhouse tailrace discharges into Reeds Brook at the highwater elevation of Graham Lake. There is one hydroelectric project downstream consisting of one water control dam (Graham Lake Dam) and one hydroelectric generation dam (Ellsworth Dam). The Project has an authorized installed capacity of 500 kilowatt and generates approximately 1,658 megawatt-hours annually.

The Project consists of: (1) a 272.2-foot-long, 7.5-foot-high dam that includes: (a) an 83-foot-long concrete-gravity section with a 79.8-foot-long spillway that has a crest elevation of 160.7

feet National Geodetic Vertical Datum of 1929 (NGVD 29), and is topped with a 2-foot-high fish screen; (b) a 12-foot-long concrete intake structure with a 4.5-foot-wide, 4.5-foot-high sluice gate equipped with an 8-foot-wide, 12-foot-high trash rack with a 1-inch clear bar spacing; (c) a 20.2-foot-long concrete gate structure with two approximately 6-foot-wide, 7-foot-high sluice gates, each equipped with a vertical lift, fish screen with an approximately 0.75-inch mesh size; and (d) a 157-foot-long section that includes: (i) a 35.5-foot-long auxiliary spillway with a crest elevation of 161.5 feet NGVD 29; (ii) a 71-foot-long auxiliary spillway with a crest elevation of 163.4 feet NGVD 29; and (iii) a 50.5-foot-long auxiliary spillway with a crest elevation of 163.8 feet NGVD 29; (2) an impoundment (Green Lake) with a surface area of 2,989 acres at an elevation of 160.7 feet NGVD 29; (3) an approximately 92-foot-long concrete channel that conveys flows from the spillway to Reeds Brook; (4) a 1,744-foot-long penstock; (5) a 27-foot-long, 35-foot-wide concrete powerhouse containing a 400-kilowatt (kW) Allis-Chalmers tube turbine-generator unit and a 25-kW centrifugal pump turbine-generator unit, for a total installed capacity of 425 kW; (6) a 35.38-foot-long, 5-foot-diameter discharge pipe and a 42.25-foot-long, 5-foot-diameter discharge pipe from the powerhouse; (7) a 4.8/12.47-kilovolt (kV) step-up transformer and a 650-foot-long, 12.47-kV underground transmission line that connects the generators to the regional grid; and (8) appurtenant facilities. The project creates an approximately 1,900-foot-long bypassed reach of Reeds Brook. The Project is currently required to: (1) maintain the elevation of Green Lake between 159.7 feet and 160.7 feet NGVD 29 from June 1 through Labor Day weekend each year, and between 157.5 feet and 160.7 feet NGVD 29 for the remainder of the year; (2) complete the fall drawdown of Green Lake by October 15 of each year; (3) reduce the elevation of Green Lake during the spring drawdown to no lower than the elevation attained on the previous October 15 of each year; and (4) release a year-round minimum flow to Reeds Brook of one cubic foot per second (cfs), or inflow to Green Lake, whichever is less, for the protection and enhancement of fish and wildlife resources downstream of the dam. In addition, the current license requires Green Lake Power to provide flows of up to 30 cfs to the FWS's Green Lake National Fish Hatchery.

4. RESOURCE DESCRIPTION

4.1. UNION RIVER

The following description of the Union River basin is taken directly from Exhibit E of the Application for Subsequent License for the Project:

“The Green Lake Dam Hydroelectric Project, FERC No. 7189 (GLWP, P7189, or the Project) is located on Green Lake and Reeds Brook near the City of Ellsworth, Hancock County, Maine. The Project intake is at the Green Lake dam and the tailrace discharges into Reeds Brook near Graham Lake. The Green Lake drainage area is part of the Union River watershed.

The Union River watershed has an area of 547 square miles. Within that area, the Green Lake watershed has an area of approximately 46 square miles. Green Lake stretches 6.1 miles from

the dam to the northwest end of the lake.

Reeds Brook flows about 2000 feet (about 1800 feet straight line distance) from Green Lake just downstream of the Green Lake dam to Graham Lake, dropping about 45 feet in the process. The elevation difference between Green Lake and Graham Lake is 56.5 feet with both lakes at normal high water.

The Project power station is about 7 miles upriver from the head of tidewater on the Union River at the Ellsworth dam. The tidewater of the Union River flows a further 4.2 miles and enters the Union River Bay, part of the Atlantic Ocean. The power station is therefore about 11.2 miles, and the Green Lake dam about 11.6 miles, upstream of Union River Bay.

The following ponds and associated wetlands drain into Green Lake via streams:

Hatcase Pond

Mountainy Pond

Little Burnt Pond

Rocky Pond

Wormwood Pond

Little Duck Pond

Little Rocky Pond

Goose Pond

These ponds and wetlands absorb precipitation and have a large effect on the quantity and timing of rain runoff into Green Lake. Small amounts of precipitation result in little new water in Green Lake beyond that which falls directly on the lake. Larger amounts of precipitation cause disproportionately larger amounts of runoff—the actual amount depending on season, weather, and prior precipitation.

Ellsworth Hydroelectric's Union River Watershed map includes Phillips Lake. USGS maps show both Mann Brook and Mill Stream as possible outlets for Phillips Lake. GLWP conducted a field survey and determined that there was a large flow of water north from Phillips Lake into Mill Stream and, on the ground, Mann Brook does not connect with Phillips Lake. Because of this GLWP concluded Phillips Lake drains to the north, away from the Union River, and is not part of the Green Lake Watershed."

4.2. FISH OF THE UNION RIVER BASIN

The Union River maintains a diadromous fish assemblage, including American shad (*Alosa sapidissima*), alewife (*Alosa pseudoharengus*), blueback herring (*Alosa aestivalis*), Atlantic salmon (*Salmo salar*), and American eel (*Anguilla rostrata*) historically occurred in the Union River and have been documented in Green Lake (MDIFW, 1995). Presently, alewife, blueback herring, and Atlantic salmon are trapped and transported around the Ellsworth and Graham Lake

dams and have access through Graham Lake into Reeds Brook and up to the Project Dam. Similarly, alewife, blueback herring, and Atlantic salmon are provided egress at Ellsworth and Graham Lake dams via downstream fish passage facilities. American eel have been documented upstream of Project Dam.

4.3. IMPACTS OF DAMS ON FISH MIGRATIONS

Migratory fish have evolved to require specific conditions in river systems and the relatively recent alteration to many river systems by the construction of dams and other impacts has negatively affected migratory fish populations. Dams can impact both upstream and downstream fish migration in river systems (Limburg & Waldman, 2009, p. 961). Dams not only block or impede fish migration, but also alter the hydrology and aquatic habitat in the river. Upstream of dams, where water flow is slowed, lake-like conditions, rather than riverine ones, prevail. Water flow downstream of dams, particularly at peaking hydroelectric projects, can be significantly altered (Limburg & Waldman, 2009, p. 961) with drastic changes in water depth and velocity occurring over short time periods. Depending on the severity and location of blockages and changes to hydrology, migratory fish populations can be severely reduced or extirpated due to dam impacts (Limburg & Waldman, 2009, p. 960).

Upstream Migration

Dams present impediments to the upstream movement of juvenile eels, also referred to as yellow eels. The degree to which a given dam is an impediment depends on a number of factors, including the height of the dam, its surface, whether the surface is wetted or not, and the size of the eels trying to ascend it (Shepard, 2015, p. 69). The ability of juvenile eels to scale obstacles decreases as they grow in size (Hitt, Eyster, & Wofford, 2012). In general, a high dam with a dry, vertical surface represents the greatest barrier. While some portion of eels trying to ascend a given barrier may be successful, studies have shown that the density of eels tends to be higher downstream of a dam and lower upstream of a dam. High densities due to limited passage success may have the negative effects of altering natural sex ratios, increasing the transmission of parasites and diseases, and increasing intraspecific competition for habitat and food resources (Krueger & Oliveira, 1999, pp. 381-389; Oliveira & McCleave, 2000, pp. 141-151).

Downstream Migration

For downstream migration, fish respond to river flow and migrate past dams via different routes, including over dam spillways, down bypass channels, and through hydroelectric turbines (Castro-Santos & Haro, 2003, p. 994; Jansen, Winter, Bruijs, & Polman, 2007, p. 1442; Kynard & O'Leary, 1993, p. 785). At hydroelectric dams, large volumes of water can direct out-migrating fish into potential hazards while they attempt to pass the project. Fish may be injured or killed via entrainment through a turbine, discharge through a gate or over a spillway with no adequate plunge pool, impingement on screens and racks, and trauma due to changes in

barometric pressure (barotrauma). Mortality caused by passing downstream, through turbines, at hydroelectric projects can vary greatly depending on species, size, and life stage (adult or juvenile) of fish as well as on turbine design, including turbine flow, tip speed, rotational speed, number of blades/buckets, blade spacing, and runner diameter (Franke, et al., 1997, pp. 6, Section 4). Twelve percent mortality has been observed for American shad (Heisey et al. 2008, pp. 7-8), and one hundred percent mortality for American eel (Carr & Whoriskey, 2008, p. 393). Generally, fish passing through hydroelectric turbines can be injured or killed due to rapid barotrauma, cavitation, strike, grinding, turbulence, and shear stress (Brown, et al., 2014, pp. 109-111; Cada & Coutant, 1997).

4.4. AMERICAN EEL

4.4.1. AMERICAN EEL BIOLOGY AND LIFE HISTORY

The American eel is a catadromous species that lives in freshwater and migrates downstream to the Sargasso Sea to spawn before dying. Larval eels are transported by ocean currents to rivers along the eastern seaboard of North America. Historically, American eel were abundant in most East Coast streams, often comprising 25 percent or more of the total fish biomass (Haro, et al., 2000). However, beginning in the 1980s, a substantial decline throughout most of their range has occurred (Haro, et al., 2000).

American eels are panmictic, meaning that there is a single spawning site without mating restrictions, neither genetic nor behavioral, upon the population, and therefore random recombination occurs with each new generation of American eel. Thus, there are no unique adaptations to specific regions within the range of American eel from Canada to the Caribbean (Shepard, 2015, pp. 4-10). The spawning location is east of the Bahamas and south of Bermuda in the center of the gyre known as the Sargasso Sea. After spawning, American eel eggs hatch into "leptocephali," a small transparent, larval stage that is passively transported in ocean currents for about 1 year. Leptocephali eventually metamorphose into "glass eels" which leave ocean currents and swim to coastal waters anywhere from the Caribbean to eastern Canada. Within days of reaching coastal waters, glass eels transform into small, fully developed, pigmented eels. They are often called elvers at this stage, an imprecise term that is generally applied to small eels in fresh water that may be of many sizes and ages.

Juvenile eels are usually referred to as yellow eels. Small yellow eels are sexually indeterminate and cannot be differentiated histologically until reaching a length of about 8 inches. Yellow eel upstream movement generally occurs from dusk to dawn (Verdon, Desrochers, & Dumont, 2003, p. 131) in all months of the year with peak movement dependent on temperature and latitude (Richkus & Whalen, 2000, pp. 83-97). In 2014, Black Bear Hydro Partners, LLC conducted upstream American eel passage studies at the Ellsworth and Graham Lake dams on the Union River (BBHP, 2014). Juvenile eels were observed weekly at the Ellsworth Dam starting on June 25th, peaking on July 8th, and continuing through the last study observation date of August 5th.

At Graham Lake Dam, juvenile eels were observed weekly during the study period from June 20th through August 5th with the peak observations occurring on July 8th. The size class of eels observed at the Ellsworth Dam ranged from 2 inches to 5 inches and at Graham Lake Dam the size class ranged from 3 inches to 6 inches.

Upstream movements are to lakes, ponds, and upstream river reaches where they generally encounter fewer yellow eels, less competition, and greater opportunity for eel growth (Lamothe, Gallagher, Chivers, & Moring, 2000, p. 398). Yellow eels in upstream reaches of rivers and inland lakes tend to be older, larger, and female, although it is not known whether eels that will become female tend to move upstream or if the conditions upstream cause eels to become female (Helfman, Facey, Hales, & Bozeman, 1987, pp. 47-52; Oliveira, 1999, p. 799). Upstream habitats appear to facilitate the growth and out-migration of the largest and most fecund members of the population, in relation to downstream habitats.

Sexual maturation and silvering begin at ages from 3 years to more than 30 years. Females mature at later ages than males and eels mature at later ages in fresh water, as compared to marine and estuarine waters where growth is more rapid. Age at maturation increases with latitude—for example, silvering in fresh waters of the Chesapeake Bay region occurs at ages from 6 to 16 years (Helfman, Facey, Hales, & Bozeman, 1987, pp. 44-45), but at 8 to 23 years in Canada (Cairns, et al., 2005, p. 11). The timing of silver eel migration has also been correlated with latitudinal location, occurring in large part in late summer in the north and late winter in the south (Haro, 2003, p. 213). For example, silver eels migrate from the St. Lawrence River in large part from August to November, from Connecticut rivers in September through October, and from Georgia rivers from October through March (ASMFC, 2012, p. 132). However, the timing of silver eel migration can also vary based on localized triggers such as weather, photoperiod, temperature, streamflow, and other local environmental conditions (Haro, 2003, pp. 216-217) and is an active area of research.

Downstream migration has been commonly perceived as occurring primarily at night. Overall, 81.2 percent of the 293 eel passage events (including yellow eels) at dams on the Shenandoah River occurred during turbine shutdown periods between 1800 and 0600 hours (Eyler, Walsh, Smith, & Rockey, 2016, p. 972). The other 18.8 percent passed during the day or were not detected. Downstream movement from fresh water is accelerated by heavy rains and rises in stream flow (i.e., freshets); two thirds of the 293 eel passage events at dams on the Shenandoah River coincided with high-discharge events (Eyler, Walsh, Smith, & Rockey, 2016, p. 972). Downstream movement of eels has been detected during each month of the year except July, and during day and night (Eyler, Walsh, Smith, & Rockey, 2016, pp. 129-130). Downstream migrants use tidal transport and travel near the surface, but also make vertical movements, especially when encountering dams (Brown, Haro, & Castro-Santos, 2009, p. 10; ASMFC, 2012, p. 7).

4.4.2. IMPACTS TO AMERICAN EEL MIGRATION

Providing safe, timely, and effective upstream passage will enhance the abundance of eels in the Union River. Likewise, ensuring the safe, timely, and effective downstream passage of eels will avoid or minimize mortality of yellow eels that may pass downstream of the dam during their lengthy freshwater residency period and of adults during their seaward migration to the Sargasso Sea to spawn. This is consistent with regional fishery management goals (ASMFC 2000) and the Service's 12-month finding (80 FR, page 60834).

4.4.3. CURRENT STATUS OF THE AMERICAN EEL POPULATION

In 2004, the USFWS was petitioned to list American eel under the Endangered Species Act (ESA), but ultimately determined that listing was not warranted (USFWS, 2007, p. 4997). The USFWS determined that although the population of American eel had declined and had been extirpated from some areas, it was still widely distributed throughout its historic range and not in immediate threat of extinction. In 2010, the Council for Endangered Species Act Reliability (CESAR) petitioned the USFWS to re-consider listing the American eel under the ESA based on new information (CESAR, 2010). The 2010 petition suggested that American eel was currently threatened with extinction due to the present or threatened destruction, modification, or curtailment of its habitat or range, overutilization for commercial and recreational purposes, disease and possibly predation, the inadequacy of existing regulatory mechanisms, as well as global warming, and anthropogenic factors related to electric generation by hydroelectric projects and the spread of swim bladder parasites from ship ballast water (CESAR, 2010, pp. 1-2). In 2015, the USFWS completed the status review and determined that listing was not warranted at this time and that the American eel remains widely distributed throughout its native range (USFWS, 2015, p. 60838).

4.4.4. RESOURCE MANAGEMENT GOALS FOR AMERICAN EEL

The Comprehensive Resource Management Plans filed at the Commission for eels are listed in Section 10.1 and the State Resource Management Plans are listed in Section 10.2; the goals and objectives of these plans are outlined here. The decline of eels and the ecological services they provide is a widely held concern among Atlantic Coast states in the Northeast. Management objectives for American eel are outlined in the Interstate Fishery Management Plan (FMP) for American Eel published by the Atlantic States Marine Fisheries Commission (ASMFC) (ASMFC, 2000, p. iv). The FMP's goals are to maintain and enhance the abundance of American eels in inland coastal waters and to contribute to the viability of the adult American eel spawning population at sea. An objective is to provide adequate upstream passage and escapement to inland waters for elvers and juvenile eels, as well as to provide adequate downstream passage and escapement to the ocean for pre-spawn adult eels. Another objective is to restore American eel where they have been extirpated and increase their numbers where they still occur. The FMP identifies the lack of adequate upstream and downstream passage for

migrating juvenile and adult eels as an impact on the population.

Since its development in 2000, the FMP has been modified five times. Addendum I (approved 2006) established a mandatory reporting of harvest and effort by commercial fishers and dealers (ASMFC, 2006, p. 2). Addendum II (approved 2008) made recommendations for improving upstream and downstream passage for American eels. The ASMFC recommended special considerations for American eels in Commission hydropower licensing proceedings. These considerations include, but are not limited to, improving upstream passage and downstream passage, and collecting data on both means of passage (ASMFC, 2008, p. 5). In addition, both the 2012 and 2017 Benchmark Stock Assessments (ASMFC, 2012; ASMFC, 2017)(ASMFC, 2012; ASMFC, 2017) found that the American eel population in U.S. waters is at or near historically low levels due to a combination of historical overfishing, habitat loss and alteration, productivity and food web alterations, predation, turbine mortality, changing climatic and oceanic conditions, toxins and contaminants, and disease. Addendum III (ASMFC, 2013, pp. 4-5) contains a recommendation that jurisdictions identify opportunities to work within the Commission's review process and with non-Commission dam owners to improve downstream eel passage and to seek opportunities to improve upstream eel passage through obstruction removal and deployment of eel passage structures. Addendum IV (ASMFC, 2014, pp. ii-iii) made changes to the commercial fishery, implementing restrictions on the elver and yellow eel commercial fisheries. Addendum V (ASMFC, 2018, p. 3)(ASMFC, 2018, p. 3) implemented new restrictions on the yellow eel fishery and recommended new triggers for evaluating and addressing the coastwide cap for yellow eels.

American eel fisheries in Maine are regulated by the Maine Department of Marine Resources (MDMR) under the interstate jurisdiction of the ASMFC. Statewide Maine landings data are available, but landings for specific locations (e.g., the Union River) or from specific harvesters are considered proprietary information and are not available. Maine commercial American eel fisheries landings data are summarized statewide by gear type and reported to the ASMFC (2021 entire). For example, 2021 commercial landings of American eel in Maine were comprised of 457 pounds of yellow eels, caught in brackish and freshwater using baited eel pots and fyke nets, and 9,106 pounds of glass eels caught at river mouths in fyke nets and dip nets. In terms of abundance, these harvests represent hundreds of silver eels, thousands of yellow eels, and millions of glass eels.

The Maine glass eel fishery began in the 1970's and grew in the early 1990's when demand increased to supply glass eels to the Asian aquaculture market (MDMR, 2016, entire). Glass eels are a transient migratory life stage that follows the metamorphosis of larvae at sea and terminates when the glass eel's pigment, usually a few days after reaching continental waters. Glass eels are shipped to Asian aquaculture industries raising food fish. This fishery is often called an "elver" fishery, but elvers are small pigmented juvenile eels and only glass eels are marketed. The glass eel fishery was very limited from 1979 to the early 1990's since glass eels from Asia or Europe are preferred over American eels. Demand for American glass eels, and the prices

paid to commercial fishers, have increased since 2010 due to the scarcity of Asian glass eels and the ban on the export of European glass eels.

In August 2000, pursuant to Article 406 of the Ellsworth License (FERC No. 2727), the former Licensee and Department of the Interior submitted to the Commission the Comprehensive Fishery Management Plan for the Union River Drainage (Plan). The Plan was jointly developed by the Union River Fisheries Coordinating Committee (URFCC). The goal of the plan was to "Manage all sport and commercial fish species in the Union River in an ecologically responsible manner to optimize habitat utilization, fish abundance, and public benefit." In addition, the Plan states "it is the objective of the [Maine Department of Marine Resources] to restore eels to their natural abundance in all waters of the Union River drainage. The URFCC had revised the plan on a five-year cycle and met annually to review results and develop interim modifications if needed. The revised 2015-2017 plan (URFCC, 2015) was in effect from its acceptance in March 2015 until December 31, 2017, when the current license expired.

4.4.5. EXISTING FISH PASSAGE AND RESTORATION EFFORTS FOR AMERICAN EEL

Eel Passage at the Project

There are no existing fish passage facilities at the Project.

Eel Passage at Graham Lake Dam and Ellsworth Dam

Downstream of Green Lake Hydroelectric Project dam is the Ellsworth (FERC No. 2727) Hydroelectric Project, which is also currently undergoing relicensing. There are currently no eel passage facilities at this project. The Department expects safe, timely, and effective upstream and downstream eel passage will be operational at the Ellsworth Hydroelectric Project (Ellsworth Dam and Graham Lake Dam) no later than 2 years following the issuance of a new license. The cumulative effects of these enhanced passage measures, once implemented, will be an increase in abundance of eels up to the Green Lake Hydroelectric Project (FERC No. 7189).

4.4.6. ACTIONS NECESSARY TO ACCOMPLISH RESOURCE MANAGEMENT GOALS FOR AMERICAN EEL

Lack of upstream eel passage facilities at the Project diminishes access to Green Lake which is over six miles long and approximately 2,989 surface acres. The area above Green Lake Dam accounts for about 8.5% of the Union River watershed. Given the documented presence of eels upstream and downstream of the Project, both upstream and downstream eel passage is warranted following the establishment of eel passage at both Ellsworth and Graham Lake dams. Providing safe, timely, and effective upstream passage will enhance the abundance of eels in the Union River watershed and help meet management goals. Likewise, providing safe, timely, and effective downstream passage and protection will avoid or minimize mortality of American eels

when they pass downstream. To enhance and restore an eel population to the Union River, the upstream and downstream passage and protection measures in Section 8 are necessary to support these populations.

5. FISH PASSAGE ALTERNATIVES PROPOSED BY THE APPLICANT

Alternatives for fish passage considered during consultation and proposed by the Applicant are discussed below.

5.1. AMERICAN EEL

There are no existing upstream or downstream eel passage facilities at the Project. The Applicant is not proposing to provide upstream passage for American eels at this time. American eels are documented in the Union River and the Department has prescribed for eel passage at the Ellsworth Hydroelectric Project (FERC No. 2727) downstream of this Project. Therefore, the Department is prescribing upstream eel passage and protection facilities outlined in Section 8.

The Applicant is proposing two modifications as downstream passage and protective measures. First, the Applicant proposes to modify the existing trash rack to avoid eel entrainment in the penstock by closing a two-inch gap at the side of the trash rack or to reduce the gap to a maximum opening of one inch to make the clear spacing of the trash racks consistent at one inch. Second, the Applicant proposes to modify the fish screens in front of the dam gates to create two-inch clear spacing or to provide a downstream passage portal under the gate large enough to pass eels with the gate closed. These proposed downstream eel passage measures are inconsistent with the Department's eel passage guidelines. Therefore, the Department is prescribing downstream eel passage and protection facilities outlined in Section 8.

6. STATUTORY AUTHORITY

Section 18 of the FPA, 16 USCS §811, states in pertinent part:

“The Commission shall require the construction, maintenance, and operation by a Licensee at its own expense of ...such fishways as may be prescribed by the Secretary of the Interior or the Secretary of Commerce, as appropriate.”

Section 1701(b) of the National Energy Policy Act of 1992, P.L. 102-486, Title XVII, §1701(b), 106 Stat. 3008, states:

“The items which may constitute a ‘fishway’ under Section 18 [16 USCS §811] for the safe and timely upstream and downstream passage of fish will be limited to physical structures, facilities, or devices necessary to maintain all life stages of such fish, and project operations and measures related to such structures, facilities or devices necessary to ensure the effectiveness of such structures, facilities, or

devices for such fish.”

The Prescription herein is issued under authority delegated to the Regional Director from the Secretary of the Interior, the Assistant Secretary for Fish, Wildlife, and Parks, and the Director of the USFWS pursuant to Section 18 of the FPA. (See 64 Stat. 1262; 209 Departmental Manual 6.1; 242 Departmental Manual 1.1A).

7. RESERVATION OF AUTHORITY TO PRESCRIBE FISHWAYS

In order to allow for the timely implementation of fishways, including effectiveness measures, the Department reserves authority to prescribe fishways during the term of the license and requires that the following condition be included in any license(s) the Commission may issue for the Project:

“Pursuant to Section 18 of the Federal Power Act, the Secretary of the Interior herein exercises their authority under said Act by reserving that authority to prescribe fishways during the term of this license and by prescribing the fishways described in the Department of Interior’s Prescription for Fishways at the Green Lake Water Power Company Hydroelectric Project.”

8. SECTION 18 PRESCRIPTION FOR FISHWAYS –TERMS AND CONDITIONS

Pursuant to Section 18 of the FPA, as amended, the Secretary of the Department, as delegated to the USFWS, hereby exercises their authority to prescribe the construction, operation and maintenance of such fishways as deemed necessary, subject to the procedural provisions contained above.

To ensure the immediate and timely contribution of the fish passage facilities and measures to fish restoration and enhancement in the Union River, the following are included and shall be complied with by the Licensee to ensure the effectiveness of the fishways pursuant to Section 1701(b) of the 1992 National Energy Policy Act (P.L. 102-486, Title XVII, 106 Stat. 3008).

8.1. CONDITION 1: REVISION OF SECTION 18 FISHWAY PRESCRIPTION

The Secretary of the Department reserves the right, after notice and opportunity for comment, to require changes in the Project and its operation through revision of this Section 18 Fishway Prescription to protect and enhance fish passage at the Project. The Secretary also reserves the right to modify these conditions, if necessary, to respond to any significant changes that warrant a revision of this Prescription.

8.2. CONDITION 2: OPERATING PERIODS

Regarding the timing of seasonal fishway operations, fishways shall be maintained and operated, at the Licensee’s expense, to maximize fish passage effectiveness throughout the fish passage

season for American eel. The migratory season for diadromous fish has been studied for the major rivers of the Northeast (Facey & Van Den Avyle, 1987, p. 7; Mullen, Fay, & Moring, 1986; Weiss-Glanz, Stanely, & Moring, 1986; Loesch, 1987; ASMFC, 2000, p. 8; Saunders, Hachey, & Fay, 2006, p. 539) (ASMFC, 2009, p. 9; Shepard, 2015; Eyler, Walsh, Smith, & Rockey, 2016). The season depends on geographic location, water temperature, river flow, and other habitat cues. Based on data from nearby watersheds, approved fish passage protective measures shall be operational during the migration windows identified in Table 1. These dates may change based on new information, including siting or effectiveness studies, improved access at the lower dams, evaluation of new literature, and agency consultation.

Table 1. Summary of periods for which fish passage will be provided.

| Species | Upstream Passage Season | Downstream Passage Season |
|--------------|-------------------------|---------------------------|
| American eel | June 1 - October 31 | August 1 - October 31 |

8.3. CONDITION 3: AGENCY ACCESS AND INSPECTION

The Licensee shall provide USFWS personnel and other USFWS-designated representatives, timely access to the fish passage facilities at the Project and to pertinent Project operational records for the purpose of inspecting the fishway to determine compliance with this Prescription.

8.4. CONDITION 4: MAINTENANCE AND REPAIR

The Licensee shall keep the fishway in proper order and shall keep the trashracks and fishway areas clear of leaves, trash, logs, and any material that can increase impingement and cause injury or hinder passage. Anticipated maintenance shall be performed when necessary and in accordance with the Fishway and Operation Maintenance Plan (see Section 8.5), and the fishway will operate effectively prior to and during the migratory periods.

8.5. CONDITION 5: FISHWAY OPERATION AND MAINTENANCE PLAN

Within 2 years following the effective date of the license, the Licensee shall develop a Fishway Operation and Maintenance Plan (FOMP), in consultation with the USFWS and the Maine Departments of Marine Resources and Inland Fish and Wildlife, and approved by the USFWS, to document regular maintenance activities and emergency procedures. The Licensee shall keep the FOMP updated on an annual basis to reflect any changes in fishway operation and maintenance planned for the year. The FOMP shall include general schedules and procedures for:

- Fishway operation and maintenance, including the method and calculations for provision of any required flows;
- Inspection and monitoring of the fishway facilities, including regular observation of facilities and periodic trashrack inspections; and,

- Emergency and exception procedures.

If the USFWS, at its discretion, or in consultation with the Maine Departments of Marine Resources and Inland Fish and Wildlife, requests a modification of the FOMP, the Licensee shall amend the FOMP within 30 days of the request and send a copy of the revised FOMP to the USFWS, the Maine Department of Marine Resources, the Maine Department of Inland Fish and Wildlife, and the Commission. Any modifications to the FOMP by the Licensee shall require the approval of the USFWS, in consultation with the Maine Departments of Marine Resources and Inland Fish and Wildlife, prior to implementation and prior to submitting the revised FOMP to the Commission for its approval.

8.6. CONDITION 6: FISHWAY OPERATION AND MAINTENANCE REPORT

The Licensee shall prepare a Fishway Operation and Maintenance Report (FOMR) and submit it to the USFWS and the Maine Departments of Marine Resources and Inland Fish and Wildlife by January 31 each year following the completion of fishway construction. The FOMR shall be in letter report format and will include a summary of the current state of the fishways (structures, flows, etc.), a yearly fishway operation and maintenance report (deviations, issues, timing of installation, etc.), and summary data on the flows (e.g., high flow events) and generation experienced (e.g., non-operational periods) at the Project throughout the year.

The Licensee shall provide information on fish passage operations, and Project generating operations that may affect fish passage, upon written request from the USFWS or other resource agencies. Such information shall be provided within 10 calendar days of the request, or upon a mutually agreed upon schedule.

8.7. CONDITION 7: DESIGN PLANS

The Licensee shall develop design plans and submit these plans to the USFWS for review and approval, in consultation with the Maine Departments of Marine Resources and Inland Fish and Wildlife, at the 30%, 60% and 90% percent design stages in accordance with Section 9. The USFWS and Maine Departments of Marine Resources and Inland Fish and Wildlife shall have 30 days to review and comment on any submitted design drawings. Designs shall be consistent with the USFWS Engineering Criteria (USFWS, 2019) or other updated version or guidance, as determined by the USFWS.

The Licensee shall submit final design plans, approved by the USFWS, to the Commission for its approval prior to the commencement of fishway construction activities. Once the fishway is installed, final as-built drawings that accurately reflect the Project as constructed shall be filed with the USFWS, the Maine Departments of Marine Resources, the Maine Inland Fish and Wildlife, and the Commission.

8.8. CONDITION 9: DOWNSTREAM FISH EXCLUSION

Within 2 years following the effective date of the license, the Licensee shall install permanent full-depth trash racks with a 3/4-inch clear spacing to avoid eel entrainment in the penstock consistent with the USFWS Engineering Criteria (USFWS, 2019). The trash racks shall be installed at the upstream extent of the penstock. The final location and design of the trashracks shall be developed in consultation with the USFWS and the Maine Departments of Marine Resources and Inland Fish and Wildlife and approved by the USFWS. The Licensee shall provide the USFWS and the Maine Departments of Marine Resources and Inland Fish and Wildlife with designs for the trashracks in accordance with the scheduling provisions in Section 9.

8.9. CONDITION 10: TRASHRACK INSPECTION

The Licensee shall regularly inspect the full depth of the trash racks. An inspection should occur whenever there is the potential for damage to the trashracks due to debris or ice damage, but not less than once every 5 years after the license is issued. Any damaged areas shall be repaired within 90 days, unless extended by request and approval of the USFWS, to ensure that no areas with clear-spacing greater than 3/4 inch are present.

8.10. CONDITION 11: DOWNSTREAM ROUTE OF PASSAGE

Within 2 years following the effective date of the license, the Licensee shall install and maintain a seasonal fish passage structure for the downstream movement of American eel found in the Green Lake. The downstream American eel passage structure shall be consistent with the USFWS Engineering Criteria (USFWS, 2019) or other updated version or guidance, as determined by the USFWS, notwithstanding site-specific limitations as determined by the USFWS. The downstream fish passage structure shall be operated for the entirety of the downstream eel passage seasons defined in Section 8.2 on an annual basis. The final location and design of the downstream fish passage facilities shall be developed in consultation with the USFWS and the Maine Departments of Marine Resources and Inland Fish and Wildlife and approved by the USFWS. The Licensee shall provide the USFWS and the Maine Departments of Marine Resources and Inland Fish and Wildlife with designs for the structure in accordance with the scheduling provisions in Section 9.

8.11. CONDITION 12: AMERICAN EEL SITING STUDY

Beginning the second eel passage season following establishment of American eel passage at the Ellsworth and Graham Lake dam sites, the Licensee shall conduct a 2-year upstream eel siting study, in order to determine proper siting of permanent upstream eel passage facilities. Based on results of that study, the Licensee shall, in consultation with the USFWS, determine optimal locations for installing such facilities. The study shall be developed and performed in consultation with the USFWS and shall consist of the continued deployment of up to two

temporary eel ladders or ramps within 10 days of ice out, or April 1, whichever is later, through October 31, for 2 years. The Licensee shall provide the USFWS and the Maine Departments of Marine Resources and Inland Fish and Wildlife with a draft eel siting study plan for review and approval at least 4 months prior to the start of the study in accordance with the scheduling provisions in Section 9. If the USFWS requests a modification of the draft eel siting study plan, the Licensee shall amend the plan within 30 days of the request and send a copy of the revised plan to the USFWS and resource agencies. Any modifications to the plan by the Licensee will require approval by the USFWS prior to implementation. The Licensee shall include yearly interim study reports to the USFWS via the FOMR (Section 8.6) following the conclusion of each study year. The results of the study shall be provided to the USFWS and the Maine Departments of Marine Resources and Inland Fish and Wildlife in the annual FOMR.

8.12. CONDITION 13: UPSTREAM AMERICAN EEL PASSAGE

Within 2 years following the completion of the American eel siting study, the Licensee shall provide a seasonal upstream eel ladder/ramp at the Project. The ladder shall remain in place for the entirety of the upstream eel passage season defined in Section 8.2 on an annual basis. The final location and design of the seasonal upstream eel ladder/ramp shall be developed in consultation with, and approved by, the USFWS, in consultation with the Maine Departments of Marine Resources and Inland Fish and Wildlife. The Licensee shall provide the USFWS and the Maine Departments of Marine Resources and Inland Fish and Wildlife with designs for the structure in accordance with the scheduling provisions in Section 9.

8.13. CONDITION 15: FISH PASSAGE EFFECTIVENESS STUDY

Effectiveness testing of both upstream and downstream American eel passage is critical to evaluating the passage success, diagnosing problems, determining when fish passage modifications are needed, and what modifications are most likely to be effective. It is essential to ensuring the effectiveness of fishways over the term of the license, particularly in cases where the changing size of fish populations may also change fish passage efficiency or limit effectiveness.

The Licensee shall develop a 2-year Fishway Effectiveness Monitoring Plan (FEMP) in consultation with the USFWS and Maine Departments of Marine Resources and Inland Fish and Wildlife, and requiring approval by the USFWS. The Licensee shall provide the USFWS and the Maine Departments of Marine Resources and Inland Fish and Wildlife with a draft FEMP for review and approval 4 months prior to the implementation dates for installing upstream eel passage measures in accordance with the scheduling provisions in Section 9. The FEMP will contain plans for ensuring (1) the effectiveness of the upstream eel and downstream eel passage measures required pursuant to Section 8; and (2) that the minimum bypass flow of 1 cubic feet per second provides safe, timely, and effective downstream passage to migrating eels (i.e., does not strand fish). If the USFWS requests a modification of the FEMP, the Licensee shall amend the FEMP within 30 days of the request and send a copy of the revised FEMP to the USFWS and

resource agencies. Any modifications to the FEMP by the Licensee will require approval by the USFWS prior to implementation. The Licensee shall include yearly interim study reports to the USFWS via the FOMR (Section 8.6) following the conclusion of each study year.

The Licensee shall begin implementing the FEMP at the start of the first eel passage season after each eelway becomes operational and shall conduct quantitative fish passage effectiveness testing and evaluation for a minimum of 2 years. The results of the study shall be provided to the USFWS and the Maine Departments of Marine Resources and Inland Fish and Wildlife in the annual FOMR (Section 8.6) and shall include methods, data analysis, results, an assessment of any factors or potential problems hindering passage effectiveness, and provide recommended modifications to achieve safe, timely, and effective passage. The Licensee shall also provide electronic copies of all data collected from studies to the USFWS.

8.14. CONDITION 16: MODIFICATIONS

The Licensee shall modify the downstream passage facilities to improve effectiveness if deemed necessary by the USFWS, in consultation with the Maine Departments of Marine Resources and Inland Fish and Wildlife based on any future inspections of the facilities. Such modifications may include, but are not limited to, the attraction and conveyance flow velocities and volumes, the structures directing conveyance flows, the position of the trashracks and any necessary repairs, and plunge pool design.

8.15. CONDITION 17: EXCEPTIONS

The Licensee may curtail or suspend fish passage and exclusion measures for up to three weeks upon mutual agreement between the Licensee, the USFWS, and the Maine Departments of Marine Resources and Inland Fish and Wildlife.

In the event of any operating emergency beyond the control of the Licensee, the Licensee may curtail or suspend fish exclusion and/or passage measures for only the time period necessary to rectify such an emergency. The Licensee shall notify the USFWS and the Maine Departments of Marine Resources and Inland Fish and Wildlife as soon as possible, but no later than 5 business days after any such operating emergency. The Licensee shall notify the Commission in writing within 10 days after any such operating emergency, or by any period as established by the Commission.

8.16. CONDITION 18: APPROVAL OF EXTENSIONS

The Licensee shall (1) notify, and (2) obtain approval from, the USFWS for any extensions of time to comply with the provisions included in the USFWS's Prescription.

8.17. CONDITION 19: MITIGATION MEASURES

Based on our review of an extension of time or exception request, the USFWS may require

interim measures for mitigation, including but not limited to, curtailment or cessation of generation, additional monitoring or studies, or interim fish passage measures, as necessary. Any extensions of time or exceptions not approved by the USFWS, or lapsed out without our required interim measures for mitigation, should be considered license violations by the Commission, in accordance with Section 31 of the FPA, for compliance, enforcement, and assessment of civil penalties.

9. IMPLEMENTATION SCHEDULE

The Licensee shall design and install the fishway structures and implement any other measures in compliance with the schedule in Table 1, below.

Table 2. Implementation schedule of fish passage structures and measures.

| <u>Structure/Measure</u> | <u>Action</u> | <u>Implementation Deadline</u> |
|-----------------------------------|--|--|
| Trash Racks | Design | At least 6 months prior to installation |
| | Installation | Within 2 years following the effective date of the license |
| Downstream Eel Passage Facilities | Design | a. 30 percent design 18 months prior to installation b. 60 percent design 15 months prior to installation c. 90 percent design 12 months prior to installation |
| | Installation and operation | Within 2 years following the effective date of the license |
| American Eel Siting Study | Submit plan to USFWS for review and approval | At least 6 months prior to the start of the study |
| | Implementation of study | Beginning the second eel passage season following establishment of eel passage at the Ellsworth and Graham Lake dam sites |
| Upstream Eel Passage Facilities | Design | a. 30 percent designs 18 months prior to installation, and following delivery of the eel siting study report b. 60 percent designs 15 months prior to installation, |

| | | |
|--|--|--|
| | | and following delivery of the eel siting study report c. 90 percent designs 12 months prior to installation |
| | Installation and operation | Within 2 years following the completion of the American eel siting study |
| Fishway Effectiveness Monitoring Study | Submit plan to USFWS for review and approval | At least 6 months prior to installing upstream eel, eel passage measures |
| | Implementation of study | Beginning the first fish passage season after a fishway is operational following the effective date of the license |
| Fishway Operation and Maintenance Plan | File with the Commission | Within 2 years following the effective date of the license |
| Fishway Operation and Maintenance Report | File with the Commission | By January 31 each year following the completion of fishway construction |

10. REFERENCES CITED

10.1. COMPREHENSIVE RESOURCE MANAGEMENT PLANS FILED AT THE COMMISSION

The following published regional resource management plans recognized by the Commission's Licensing Process contain management goals that pertain to American eel:

Atlantic States Marine Fisheries Commission. 2000. Interstate Fishery Management Plan for American eel (*Anguilla rostrata*). (Report No. 36). April 2000.

Atlantic States Marine Fisheries Commission. 2008. Amendment 2 to the Interstate Fishery Management Plan for American eel. Arlington, Virginia. October 2008.

Atlantic States Marine Fisheries Commission. 2013. Amendment 3 to the Interstate Fishery Management Plan for American eel. Arlington, Virginia. August 2013.

Atlantic States Marine Fisheries Commission. 2014. Amendment 4 to the Interstate Fishery Management Plan for American eel. Arlington, Virginia. October 2014.

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Wildlife. Augusta, Maine.

U.S. Fish and Wildlife Service. Undated. Fisheries USA: the recreational fisheries policy of the U.S. Fish and Wildlife Service. Washington, DC.

10.2. INDEX TO THE ADMINISTRATIVE RECORD

Evidence to support the USFWS's Prescription for Fishways is contained in the Administrative Record before the Commission, and the citations to the extant record are provided herein:

- ASMFC. (2000). *Interstate Fishery Management Plan for American Eel. Fishery Management Report No. 36*. Atlantic States Marine Fisheries Commission. Retrieved from <http://www.asmfc.org/uploads/file/amEelFMP.pdf>
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Document Content(s)

DOI Comments Green Lake Hydroelectric_Maine_REA.pdf1
Enclosure I Section 4(e) Green Lake Hydro w Appendix A.pdf5
Enclosure II Prelim Prescription Green Lake Hydro.pdf41