Brookfield

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November 1, 2017
Via Electronic Filing

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

Bear Swamp Hydroelectric Project (FERC No. 2669)
Draft License Application

Dear Secretary Bose:

Bear Swamp Power Company, LLC (BSPC or Licensee) is the Licensee for the 610-megawatt Bear Swamp Project (Project) (FERC No. 2669). BSPC is pursuing a new license for the Project from the Federal Energy Regulatory Commission (FERC or Commission) using the Commission's Integrated Licensing Process (ILP). In accordance with 18 C.F.R. § 5.16(a), BSPC is filing herewith the Draft License Application (DLA) for the Project.

The DLA is composed of four volumes, as described below. Exhibit E – Environmental Report contains Licensee's analysis of the effects of the Proposed Action, relicensing the continued operation and maintenance of the Project. Based upon the analysis of the effects of the Proposed Action on developmental and non-developmental resources, Licensee is proposing to continue the fundamental operation of the Project and to provide several resource enhancements as discussed in detail in Exhibit E.

The Draft License Application consists of the following:

VOLUME I OF IV
- Executive Summary
- Initial Statement and Additional Information Required by 18 CFR § 5.18(a)
- Exhibit A – Project Description
- Exhibit B – Project Operation and Resource Utilization
- Exhibit C – Construction History
- Exhibit D – Statement of Cost and Financing
- Exhibit F – List of General Design Drawings
- Exhibit G – Project Maps
- Exhibit H – Description of Project Management and Need for Project Power

VOLUME II OF IV
- Part 1 - Exhibit E – Environmental Report
- Part 2 - Exhibit E – Appendices

VOLUME III OF IV (PRIVILEGED)
- Details of State-listed Rare Plants and State-listed Odonates

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VOLUME IV OF IV (CRITICAL ENERGY INFRASTRUCTURE INFORMATION (CEII))

- Exhibit F – General Design Drawings
- Exhibit H – Single-Line Electrical Diagrams

Certain information within the DLA is still under development or more appropriately filed with the Final License Application (FLA) in March 2018. Additionally, proposals presented in the DLA are preliminary.

BSPC is making the DLA available to resource agencies, Indian tribes, local governments, non-governmental organizations, and members of the public who are on the Project distribution list. An electronic copy of the DLA can be downloaded from FERC's eLibrary system (https://www.ferc.gov/docs-filing/elibrary.asp) by searching under docket number P-2669 (sub docket 085). The DLA will also be available at the Project's public relicensing website at www.bearswampproject.com.

In accordance with 18 CFR § 5.16(e), interested parties may file comments regarding the DLA within 90 days of the date of this letter (i.e., by January 30, 2018). All comments must be filed with FERC at the following address:

Hon. Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street. NE
Washington, D.C. 20426

If you have any questions regarding this filing, please contact either Steve Murphy at (315) 598-6130 (Steven.Murphy@BrookfieldRenewable.com) or myself at (207) 755-5603 (Frank.Dunlap@BrookfieldRenewable.com).

Sincerely,

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Bear Swamp Project (FERC No. 2669)
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BEAR SWAMP PROJECT

(FERC NO. 2669)

DRAFT LICENSE APPLICATION
VOLUME I OF V

Prepared for:
Bear Swamp Power Company LLC

Prepared by:
HDR

NOVEMBER 1, 2017

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LIST OF ACRONYMS

AMC	Appalachian Mountain Club
APE	Area of Potential Effects
BSPC	Bear Swamp Power Company LLC
CEII	Critical Energy Infrastructure Information
C.F.R.	Code of Federal Regulations
cfs	cubic feet-per-second
DLA	Draft License Application
DRP	Deerfield River Project (FERC No. 2323)
EA	Environmental Assessment
ESA	Endangered Species Act
FBD	Fife Brook Development
FERC or Commission	Federal Energy Regulatory Commission
FLA	Final License Application
FPA	Federal Power Act
FPC	Federal Power Commission
ft	feet
Great River or GRH	Great River Hydro, LLC
hp	horsepower
HPMP	Historic Properties Management Plan
IDF	Inflow Design Flood
ILP	Integrated Licensing Process
ISO New England	Independent System Operator of New England
ISR	Initial Study Report
kV	kilovolt
kVA	kilovolt hours
MADFW	Massachusetts Division of Fisheries and Wildlife
MEOEEA	Massachusetts Executive Office of Energy and Environmental Affairs
MHC	Massachusetts Historical Commission
MVA	megavolt amperes

LIST OF ACRONYMS

MW	megawatt
MWh	megawatt hours
NASCC	North Atlantic System Communication Center
NGOs	non-governmental organizations
NOI	Notice of Intent
PAD	Pre-Application Document
PF	power factor
PM&E	protection, mitigation, and enhancement
PMF	Probable Maximum Flood
Project	Bear Swamp Project (FERC No. 2669)
PSD	Pumped Storage Development
PSP	Proposed Study Plan
rpm	revolutions per minute
RSP	Revised Study Plan
SCADA	Supervisory Control and Data Acquisition
SD1	Scoping Document 1
SD2	Scoping Document 2
SPD	Study Plan Determination
Station No. 5	DRP Station No. 5 Development
Study Determination	Determination on Requests for Study Modification and New Studies for the Project
U.S.C.	United States Code
USFWS	United States Fish and Wildlife Service
USR	Updated Study Report
V	volt

Executive Summary

1.0 Introduction

Bear Swamp Power Company LLC (BSPC), a limited liability company jointly owned indirectly by Brookfield Renewable and Emera, Inc., is the Licensee, owner, and operator of the 610-megawatt (MW) Bear Swamp Project (FERC Project No. 2669) (Project). The Project is located along the Deerfield River in Berkshire and Franklin counties, in the Commonwealth of Massachusetts.

On April 28, 1970, the Federal Power Commission (FPC), predecessor to the Federal Energy Regulatory Commission (FERC or Commission), issued an original license for the Bear Swamp Project[1] in accordance with the FPC's delegated authority under the Federal Power Act (FPA), 16 United States Code (U.S.C.) § 791(a), *et seq*. The Project's existing license expires on March 31, 2020. On December 19, 2014, BSPC initiated the Commission's Integrated Licensing Process (ILP) described at 18 Code of Federal Regulations (C.F.R.) Part 5. In accordance with the applicable regulations at 18 C.F.R., BSPC must file its final application for a new license (Final License Application or FLA) with the Commission no later than March 31, 2018.

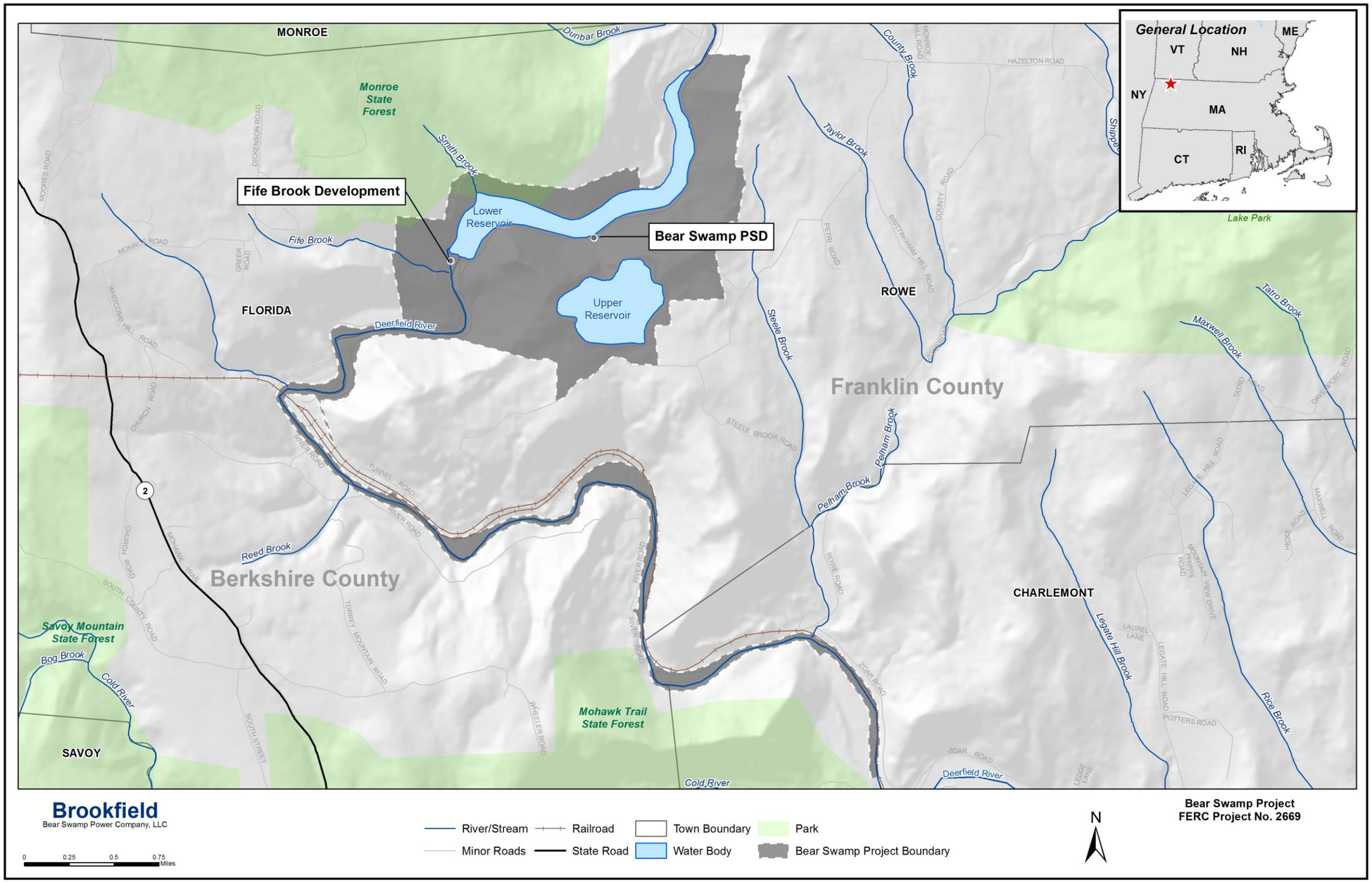
2.0 Summary of the Bear Swamp Project

BSPC acquired the Bear Swamp Project pursuant to the March 11, 2005 Commission order approving the transfers of license for the Project[2]. The Project consists of two developments, the Bear Swamp Pumped Storage Development (PSD) and the Fife Brook Development (FBD). (Figure ES-1).

The Bear Swamp PSD generally consists of an Upper Reservoir retained by four dikes and an emergency spillway, a submerged inlet/outlet structure and associated tunnel which bifurcates into two penstocks, an underground powerhouse containing two reversible Francis-type pump-turbine units and motor-generator units with a combined capacity of 600 MW, two tailrace tunnels leading to an inlet/outlet structure in the Lower Reservoir, and the Lower Reservoir (Fife Brook impoundment) formed by the Fife Brook Dam on the Deerfield River.

[1] 43 FPC ¶ 568 (1970).
[2] Order Approving Transfers of License, 110 FERC ¶ 62,245 (2005).

FIGURE ES-1
PROJECT LOCATION MAP



The FBD generally consists of the Fife Brook Dam and impoundment, which is common to both developments, a tainter gate spillway structure, a concrete intake structure, and a single penstock leading to a concrete powerhouse containing one conventional Francis turbine-generator unit with a capacity of 10 MW (Figure ES-1).

3.0 Agency Consultation and the Relicensing Process

On December 19, 2014, BSPC, as the Licensee, filed a Pre-Application Document (PAD) and Notice of Intent (NOI) to seek a new license for the Project. The PAD provided a description of the Project and summarized existing, relevant, and reasonably available information to assist resource agencies, federally recognized Indian tribes, non-governmental organizations (NGOs), and other interested parties (collectively, "stakeholders") in identifying issues, determining information needs, and preparing study requests. A preliminary list of potential studies and information needs was included in the PAD. With the NOI, BSPC requested designation as the non-federal representative for informal consultation with relevant agencies under Section 7 of the Endangered Species Act (ESA)[3] and Section 106 of the National Historic Preservation Act (NHPA)[4]. FERC granted these requests on February 18, 2015.

FERC issued Scoping Document 1 (SD1) on February 18, 2015. SD1 was intended to advise stakeholders as to the proposed scope of the Environmental Assessment (EA) and to seek additional information pertinent to the Commission's analysis of the license application. As provided in 18 CFR §§ 5.8(a) and 5.18(b), the Commission issued a notice of commencement of proceeding concomitant with SD1, and provided stakeholders with a 60-day period to request studies and provide comments on the PAD and SD1. The Commission held two public scoping meetings in North Adams, Massachusetts on March 18, 2015. A site visit at the Project was held on March 19, 2015. FERC received 13 comment letters on SD1, including comments from resource agencies and the public. FERC issued Scoping Document 2 (SD2) on June 1, 2015 to reflect issues or alternatives to be considered in the EA based on stakeholder comments and study requests filed in response to SD1.

[3] 16 U.S.C. § 1536(a)(2)
[4] 54 U.S.C. § 306108

Pursuant to the requirements of the ILP, BSPC developed a Proposed Study Plan (PSP) describing BSPC's intent to conduct 12 relicensing studies to address the comments and study requests submitted by stakeholders related to terrestrial resources, aquatic resources, recreational resources, cultural resources, and water quality. BSPC's PSP was filed with FERC on June 2, 2015. In accordance with 18 CFR § 5.11(e) a PSP Meeting was held with stakeholders on June 29 and 30, 2015 in Greenfield, Massachusetts. The purpose of the PSP Meeting was to clarify the intent and contents of the PSP, explain any initial information gathering needs, and address outstanding issues associated with the proposed studies.

In response to comments from stakeholders, BSPC filed a Revised Study Plan (RSP) on September 30, 2015 that included 15 proposed relicensing studies. FERC issued its Study Plan Determination (SPD) with modifications to the RSP on October 30, 2015. In the SPD, FERC approved five studies as filed, approved ten studies with modifications, and required four additional studies requested by stakeholders, totaling 19 studies:

1) Water Quality Study,
2) Fish Assemblage Assessment Study,
3) Mesohabitat Assessment and Mapping Study,
4) Baseline Study of Terrestrial Wildlife and Botanical Resources,
5) Wetland, Riparian, and Littoral Habitat Study,
6) Recreation Survey,
7) State-listed Rare Plants Baseline Data Collection Study,
8) Cultural Resources Survey,
9) Operations Model,
10) Instream Flow Assessment,
11) Fife Brook Flow Attenuation Study,
12) Fish Entrainment Evaluation,
13) State-listed Odonates Survey,
14) Baseline Study of Freshwater Mussel Species,
15) Northern Long-eared Bat Acoustic Survey,
16) Fife Brook Impoundment Access and Portage Feasibility Study,
17) Angler Wading Study,
18) Warning System Effectiveness Study, and
19) Whitewater Boating Flow Study.

In accordance with 18 C.F.R. § 5.15, BSPC initiated studies as provided in the study plan and schedule approved by the Commission. On October 31, 2016, BSPC filed an Initial Study Report (ISR) with the Commission and distributed the ISR to stakeholders. The ISR described the Licensee's overall progress in implementing the study plan and schedule, the data collected, and

any variances from the study plan and schedule. BSPC filed technical study reports for five of the studies as appendices to this ISR (studies 3, 11, 14, 15, and 17). In the ISR, BSPC did not propose any modifications to ongoing studies approved in the Commission's October 30, 2015 SPD or any new studies.

BSPC held an ISR Meeting on November 14 and 15, 2016 to discuss the overall progress in implementing the study plan, data collected to date, variances from the SPD, and the results of the studies filed with the Commission as appendices to the ISR. Pursuant to the ILP, BSPC filed an ISR Meeting Summary with the Commission on November 28, 2016. Stakeholders were provided a 30-day period to provide comments on the ISR Meeting Summary, recommend study modifications, or propose new studies. The Commission issued a Determination on Requests for Study Modification and New Studies for the Project (Study Determination) on February 27, 2017.

In response to a November 10, 2016 letter from the Commission, BSPC submitted a schedule on November 18, 2016 for filing individual study reports that were not included in the October 2016 ISR. The schedule for filing the individual study reports that were not included in the ISR was approved in FERC's January 10, 2017 revised process plan and schedule.

BSPC filed 10 technical study reports with the Commission on March 31, 2017 in accordance with the January 10, 2017 revised process plan and schedule (studies 1, 2, 4, 5, 7, 10, 13, 16, 18, and 19). An additional report, the Cultural Resources Study Report (study 8), was filed with the Commission on April 7, 2017. BSPC held a Study Report Meeting to discuss the results of those studies on April 11 and 12, 2017. Pursuant to the ILP, BSPC filed an April 2017 Study Report Meeting Summary with the Commission on April 27, 2017. Stakeholders were provided a 30-day period to provide comments on the April 2017 Study Report Meeting Summary, recommend study modifications, or propose new studies. Based on discussions during the April 2017 Study Report Meeting and comments filed by stakeholders, BSPC filed a supplement to the Instream Flow Assessment Study Report (study 10) on July 29, 2017. The Commission issued a Study Determination on July 28, 2017[5].

[5] Commission staff delayed a decision on the Instream Flow Assessment Study until January 28, 2018, to provide additional time to evaluate a supplemental analysis filed by BSPC on June 29, 2017.

In the Study Determination letter, Commission staff adopted certain requested modifications to the Water Quality Study (study 1), State-listed Odonates Survey (study 13), and the Whitewater Boating Flow Study (study 19), and required BSPC to file addendums to these studies by November 30, 2017.

On August 28, 2017, BSPC filed a letter requesting that the Commission modify the Project's process plan and schedule to align the filing of the Updated Study Report (USR) and the study reports for studies 6, 9, and 12. Specifically, BSPC requested that the Commission revise the process plan and schedule to allow BSPC to file the USR on September 30, 2017, instead of October 30, 2017. BSPC requested this modification to allow the meetings and any dispute resolution processes for the USR and for the study reports on studies 6, 9, and 12 to run concurrently. BSPC also stated that it would present information on the USR, studies 6, 9, and 12, and the supplemental analysis for study 10 at the Study Report Meeting to be held in October 2017. Additionally, BSPC agreed to file the addendum information required by the Commission's July 28, 2017 Study Determination on or before September 30, 2017, in order to facilitate discussion during the October 2017 Study Report Meeting and the Commission's review of any modification requests. The Commission approved BSPC's request and issued a revised process plan and schedule on September 7, 2017.

On October 2, 2017, BSPC filed the USR pursuant to the Commission's regulations at 18 C.F.R. § 5.15(f). The study reports for studies 6, 9, and 12 and the addendum information required by the Commission's July 28, 2017 Study Determination were filed as appendices to the USR[6]. As required by 18 C.F.R. § 5.16(c), BSPC notified the Commission and stakeholders of its intent to file a Draft License Application (DLA) rather than a Preliminary Licensing Proposal no later than November 1, 2017.

A Study Report Meeting was held in North Adams, Massachusetts on October 11, 2017 to discuss the overall progress in implementing the study plan, data collected to date, variances from the SPD, the studies and addendum information filed with the Commission as appendices to the USR, and the Instream Flow Assessment Study Report Supplemental Data Analysis (study 10). Pursuant to the revised process plan and schedule, BSPC filed an October 2017 Study

[6] BSPC filed the Water Quality Study Quality Assurance Project Plan (QAPP) required by the Commission's July 28, 2017 Study Determination with the Commission as an addendum to the Water Quality Study Report on August 28, 2017.

Report Meeting Summary with the Commission on October 26, 2017. Stakeholders are afforded a 30-day period to provide comments on the October 2017 Study Report Meeting Summary, recommend study modifications, or propose new studies. The Commission will issue a Study Determination on studies 6, 9, 10, and 12 and the addendum information filed as appendices to the USR by January 28, 2018.

In accordance with 18 C.F.R. § 5.16(a), BSPC is filing this DLA with the Commission and making the DLA available to stakeholders. FERC and stakeholders will have 90 days to provide comments on the DLA (i.e., until January 30, 2018). BSPC will file a Final License Application for the Project no later than March 31, 2018.

4.0 Summary of Proposed Action and Enhancement Measures

The proposed action for this application is to relicense the continued operation and maintenance of the Bear Swamp Project as described in Exhibits A, B, and E of this license application. The Licensee proposes to fundamentally continue the current operating regime of the Project and is also proposing several protection, mitigation, and enhancement (PM&E) measures for the Project. Proposals presented in this DLA reflect careful consideration of available information, the results of studies conducted, and issues specific to the Bear Swamp Project.

As further described in Exhibit E, PM&E measures proposed by the Licensee are as follows:

- Continue to provide a 125 cubic feet-per-second (cfs) continuous minimum flow release from the FBD for the protection of fish and aquatic resources.

- Continue to provide the 106 annual scheduled whitewater flow releases from the FBD on 50 weekdays and 56 weekend days. BSPC proposes to increase the required flow releases from 700 cfs under the existing license to 800 cfs, and to maintain the existing release schedule

- Develop and implement an Operations Monitoring Plan, including detail of the mechanisms and structures that will be used to provide the continuous minimum flow releases and scheduled whitewater recreation releases, and including any periodic maintenance and calibrations necessary for any installed devices and any recording and reporting of data to FERC and /or resource agencies.

- Develop and implement a Bat Management Plan in consultation with U.S. Fish and Wildlife Service (USFWS) and Massachusetts Division of Fisheries and Wildlife (MADFW), to include measures to avoid or minimize adverse effects on the Federal- and State-listed northern long-eared Bat (*Myotis septentrionalis*) and the State-listed little brown bat (*Myotis lucifugus*) or associated critical habitat that may result from future Project-related construction or land-clearing activities at the Project during the term of the license.

- Develop and implement a State-listed Rare Plants Management Plan in consultation with the MADFW, to include measures to avoid or minimize adverse effects on State-listed rare plants within the Project boundary that may result from future Project-related construction or land-clearing activities conducted during the term of the license.

- Develop and implement an Historic Properties Management Plan (HPMP) in consultation with the Massachusetts Historical Commission (MHC) and Federally recognized Indian tribes that describes how the Licensee will consider and manage historic properties within the Project's Area of Potential Effects (APE) during the term of the license.

- Develop and implement a Recreation Facilities Management Plan that describes how the Licensee will manage Project recreation facilities within the Project boundary during the term of the license, including measures to address overflow parking and/or enhance the existing overflow parking area at the Fife Brook Fishing and Boating Access Area, the design and construction of a new portage trail that begins downstream from the Showtime whitewater feature and extends upstream to the existing vehicle turnaround at the Dunbar Brook Picnic Area, and the provision of additional seasonal restroom facilities at the Zoar Picnic Area.

5.0 Draft License Application

This Draft License Application is composed of four volumes.

VOLUME I OF IV

Volume I contains Public information and exhibits as follows:

- **Table of Contents**
- **Executive Summary**
- **Initial Statement and Additional Information Required by 18 CFR § 5.18(a)**
- **Exhibit A – Project Description:** Describes the existing and proposed Project facilities.
- **Exhibit B – Project Operation and Resource Utilization:** Describes the existing and proposed operation of the Project and how the resource is utilized.

- **Exhibit C – Construction History and Proposed Construction Schedule:** Provides a construction history and schedule for proposed construction activities.
- **Exhibit D – Cost and Financing:** Provides information on the cost and financing of the Project; this exhibit is a draft and will be finalized in the FLA.
- **Exhibit F – General Design Drawings:** Includes the list of design drawings filed as Critical Energy Infrastructure Information (CEII) in accordance with 18 CFR § 388.112. Exhibit F is filed as a draft with the DLA; this exhibit will be finalized in the FLA.
- **Exhibit G – Project Maps:** Includes maps showing the Project boundary for the Bear Swamp Project. Exhibit G is filed as a draft with the DLA; this exhibit will be finalized in the FLA.
- **Exhibit H – Description of Project Management and Need for Project Power:** Describes the commitment and responsibility of BSPC as a Licensee to continue to operate and maintain the Project and the needs and costs for power from the Project or alternate sources. Exhibit H is filed as a draft with the DLA; this exhibit will be finalized in the FLA.

VOLUME II OF IV

Volume II contains Public information and includes Exhibit E, the Environmental Exhibit. Exhibit E is further divided into two parts as follows:

- **Exhibit E** - Part 1
    - Table of Contents
    - Introduction
    - Cumulative Effects – Geographic and Temporal Scope
    - Applicable Laws
    - General Description of the River Basin
    - Project Facilities and Operations
    - Environmental Analysis - Affected Environment and Environmental Effects (by Resource Area)
    - Economic Analysis
    - Consistency with Comprehensive Plans
    - Literature Cited
- **Exhibit E** – Part 2
    - Exhibit E Appendices

VOLUME III OF IV (PRIVILEGED)

Volume III contains Privileged information and includes:

- **Summary of State-listed Rare Plants and Odonates:** Contains summary information about the location and type of State-listed rare plants and odonates within the Project boundary.

VOLUME IV OF IV (Critical Energy Infrastructure Information (CEII))

Volume V contains CEII materials, and includes:

- Exhibit F – General Design Drawings
- Exhibit H – Single-Line Electrical Diagrams.

BEFORE THE
UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Bear Swamp Power Company LLC)		**Project No. 2669**
	)	**Bear Swamp Project**
	)	

APPLICATION FOR A NEW LICENSE FOR A MAJOR WATER POWER PROJECT - EXISTING DAM

INITIAL STATEMENT

1. Bear Swamp Power Company LLC (BSPC or Applicant) applies to the Federal Energy Regulatory Commission (FERC or Commission) for a new license for the Bear Swamp Project (Project), FERC No. 2669, an existing licensed major project, as described in the attached Exhibits. The current license for the Bear Swamp Project was issued by order dated April 28, 1970. The license was effective April 1, 1970 and has a termination date of March 31, 2020. The Applicant is the only entity that has or intends to obtain and will maintain any proprietary right or interest to construct, operate, or maintain the Project.

2. The location of the Project is:

State:	Commonwealth of Massachusetts
Counties:	Berkshire and Franklin Counties
Townships or Nearby Towns:	Towns of Florida, Rowe, and Charlemont
Stream or Other Body of Water:	Deerfield River

3. The exact name, business address and telephone number of the applicant is:

Bear Swamp Power Company LLC
150 Main Street
Lewiston, ME 04240
Attn: Mr. Christopher Todd Wynn, Vice President
Telephone (207) 755-5622

The exact name and business address of each person authorized to act as agent for the applicant in this application are:

Mr. Frank H. Dunlap	Mr. Steven P Murphy
Licensing Specialist	Director, U.S. Licensing
Brookfield Renewable	Brookfield Renewable
150 Main Street	33 West 1st Street South
Lewistown, ME 04240	Fulton, NY 13069

4. The applicant is:

   Bear Swamp Power Company LLC, a Delaware limited liability company, Licensee for the water power project designated as Project No. 2669 in the records of the Federal Energy Regulatory Commission. The Licensee is not claiming preference under section 7(a) of the Federal Power Act, 16 United States Code (U.S.C.) § 796.

5. (*i*) The statutory or regulatory requirements of Massachusetts, in which the Project is located, which would, assuming jurisdiction and applicability, affect the Project as proposed with respect to bed and banks and to the appropriation, diversion, and use of water for power purposes, and with respect to the right to engage in the business of developing, transmitting and distributing power and in any other business necessary to accomplish the purpose of the license under the Federal Power Act are:

   a. BSPC is a limited liability company organized under the laws of the State of Delaware and registered to do business in Massachusetts, and, as such, can engage in the activities set forth in its organizational documents, which includes the generation, transmission, and distribution of electricity from the Project.

   b. Section 401 of the federal Clean Water Act, 33 U.S.C. § 1341 (Section 401) requires that any applicant for a federal license or permit to conduct an activity that will or may discharge into waters of the United States (as defined in the Clean Water Act) must present the federal authority with a Water Quality Certification (WQC). Pursuant to Massachusetts General Law (M.G.L.) Chapter 27(3), the Massachusetts Department of Environmental Protection (MADEP) is the state agency designated to carry out the certification requirements prescribed in Section 401 of the Clean Water Act for waters of the Commonwealth of Massachusetts. The Massachusetts Clean Waters Act (M.G.L. Chapter 21 §§ 26-53) directs the MADEP to take all action necessary or appropriate to secure to the Commonwealth the benefits of the Clean Water Act, 33 U.S.C. § 1251 *et seq*. Regulations promulgated thereunder at 314 Code of Massachusetts Regulations (C.M.R.) 9.00, establish procedures and criteria for the administration of Section 401 of the federal Clean Water Act within the Commonwealth.

   c. Regulations promulgated under the Massachusetts Clean Waters Act, at 314 C.M.R. 2.00 *et seq*. provide permitting procedures for the MADEP's administration of the National Pollutant Discharge Elimination System (NPDES) permit program under delegated authority from the U.S. Environmental Protection Agency (USEPA).

   d. M.G.L. Chapter 91 (Chapter 91) (Waterways Act) and regulations promulgated thereunder at 310 CMR 9.00 *et seq*., protects the public's interest in and access to waterways of the Commonwealth, and is intended to ensure that public rights to fish, fowl, and navigate are not unreasonably restricted and that unsafe or hazardous structures are repaired or removed. Chapter 91 requires a license from the MADEP for certain structures in tidelands, Great Ponds, and rivers and streams, as defined in 310 CMR 9.00 *et seq*.

(*ii*) The steps the Applicant has taken or plans to take to comply with each of the laws cited above are:

a. The Applicant has complied with the requirements of the laws of the Commonwealth of Massachusetts with respect to the right to engage in the business of developing and transmitting power.

b. The Applicant will apply to the MADEP for a WQC pursuant to Section 401, the Massachusetts Clean Water Act, and the requirements at 314 CMR 9.00. In accordance with the Code of Federal Regulations (C.F.R.), 18 C.F.R. 5.23(b), BSPC will apply for the WQC no later than 60 days after FERC issues the Notice of Ready for Environmental Analysis. A copy of the letter requesting certification will be filed with FERC following the filing of the request.

c. Pursuant to the federal Clean Water Act and the Massachusetts Clean Waters Act, the Project is authorized to discharge equipment cooling waters, equipment and floor drain water, equipment backwash strainer water, and specific maintenance waters in accordance with effluent limitations, monitoring requirements, and other conditions set forth in the November 10, 2009 General NPDES Permit for Hydroelectric Generating Facilities in the Massachusetts (NPDES Permit MAG360000). No changes to the discharge limitations contained in those authorizations are being proposed by BSPC.

d. Five Chapter 91 licenses were issued for the Project as summarized in Table IS-1. There are no term limits or expiration dates for these licenses.

TABLE IS-1
CHAPTER 91 LICENSES ISSUED FOR PROJECT FACILITIES

License Number	Date of Issuance	Description
322	May 20, 1977	License to maintain an earth dam, powerhouse, and spillway in the Bear Swamp Lower Reservoir (Deerfield River)
323	May 20, 1977	License to maintain slope stabilization areas and an intake tailrace structure within the bounds of the Bear Swamp Lower Reservoir (Deerfield River)
5838	February 3, 1971	License to construct and maintain an earth dam with cofferdams, powerhouse, spillway, diversion channel, and two temporary roadways in the Deerfield River in the Towns of Rowe and Florida
5842	April 21, 1971	License to construct and maintain slope stabilization areas and an intake tailrace structure within the bounds of a proposed reservoir on the Deerfield River in the Towns of Rowe and Florida
5851	May 5, 1971	License to construct and maintain a powerhouse and tailrace structure within the bounds of a proposed reservoir on the Deerfield River in the Town of Florida

6. The Bear Swamp Project is an existing constructed project and does not occupy any lands of the United States. The Project consists of the Bear Swamp Pumped Storage Development and the Fife Brook Development. See Exhibit A, Project Description and Exhibit F, General Design Drawings for a complete description of the Project.

7. The names and mailing addresses of:

   (i) Every county in which any part of the project is located, and in which any Federal facility that is used or to be used by the project is located:

   The Project is located within Berkshire and Franklin Counties in the Commonwealth of Massachusetts. Per the Secretary of the Commonwealth, the governments of Franklin and Berkshire counties have been abolished and their functions have been turned over to state agencies.[7]

   There are no Federal facilities used by the Project.

   (ii) Every city, town, or similar local political subdivision in which the project is located and in which any Federal facility that is used by the project is located, or that is within 15 miles of the project dam and has a population of 5,000 or more people is:

   The Project is located in towns of Florida, Rowe, and Charlemont in the Commonwealth of Massachusetts:

   Town of Florida
   Town Clerk
   20 South Street, Drury
   Florida, MA 01343

   Town of Rowe
   Town Clerk
   321 Zoar Road, P.O. Box 308
   Rowe, MA 01367

   Town of Charlemont
   Town Clerk's Office
   157 Main Street, P.O. Box 605
   Charlemont, MA 01339

[7] Secretary of the Commonwealth of Massachusetts. Undated. Part One: Concise Facts. [Online] URL: http://www.sec.state.ma.us/cis/cismaf/mf1b.htm. Accessed October 2017.

Cities, towns, or similar local subdivision that have a population of 5,000 or more and are located within 15 miles of the Project dam include:

Town of Dalton
Town Clerk
462 Main Street
Dalton, MA 01026

Town of Adams
Town Clerk
8 Park Street
Adams, MA 01220

City of North Adams
City Clerk
10 Main Street
North Adams, MA 01247

Town of Williamstown
Town Clerk
31 North Street
Williamston, MA 01267

Town of Bennington
Town Clerk
205 South Street
Bennington, VT 05201

(iii) Every irrigation district, drainage district or similar special purpose political subdivision in which any part of the project is located and in which any Federal facility that is used by the project is located or that owns, operates, maintains or uses any project facility:

There are no irrigation, drainage or special purpose political subdivisions associated with the Project.

(iv) Every other political subdivision in the general area of the project that there is some reason to believe would be likely to be interested in, or affected by, the notification:

There are no other political districts or subdivisions that are likely to be interested in or affected by the notification.

(v) All Indian tribes that may be affected by the project:

There are no federally acknowledged Indian tribes affected by the Project. The following Indian tribes may have some level of interest in the area surrounding the Project and have been included in the distribution list for the Project;

Narragansett Indian Tribe
4533 S. County Trail
Charlestown, RI 02813

Stockbridge Munsee Community, Wisconsin
N8476 MoHeConNuck Road
Bowler, WI 54416

Wampanoag Tribe of Gay Head (Aquinnah)
20 Black Brook Road
Aquinnah, MA 02535

8. The Applicant has in accordance with 18 CFR Section 5.18 (a)(3)(i) made a good faith effort to notify, by certified mail, the following entities of the filing of this application:

(i) Every property owner of record of any interest in the property within the bounds of the project; and

(ii) The entities identified in [the] paragraph above, as well as other Federal, state, municipal or other local government agencies that would likely be interested in or affected by the application.

[A Certificate of Service will be provided in the Final Application for New License.]

13. In accordance with Sections 4.61 and 16.10 of the Commission's regulations, the following Exhibits are attached to and made a part of this application:

Exhibit A – Project Description
Exhibit B – Project Operation and Resource Utilization
Exhibit C – Construction History
Exhibit D – Statement of Costs and Financing
Exhibit E – Environmental Report
Exhibit F – General Design Drawings and Supporting Design Report
(CEII filed under separate cover)
Exhibit G – Project Maps
Exhibit H – Description of Project Management and Need for Project Power

SUBSCRIPTION

This Application for New License for the Bear Swamp Project, FERC No. 2669 is executed in the State of Maine, County of Androscoggin, by Christopher Todd Wynn, Vice President, Bear Swamp Power Company LLC, 150 Main Street, Lewiston, Maine 04240, who, being duly sworn, deposes and says that the contents of this application are true to the best of his knowledge or belief and that he is authorized to execute this application on behalf of Bear Swamp Power Company LLC. The undersigned has signed this application this ___day of March, 2018.

BEAR SWAMP POWER COMPANY LLC

By _____
Christopher Todd Wynn
Vice President
Bear Swamp Power Company LLC

VERIFICATION

Subscribed and sworn to before me, a Notary Public of the State of Maine this ___ day of March, 2018.

_____
(Notary Public)

(My Commission Expires _____)/seal

Exhibit A

Project Description

A.1 Project Location and Facilities

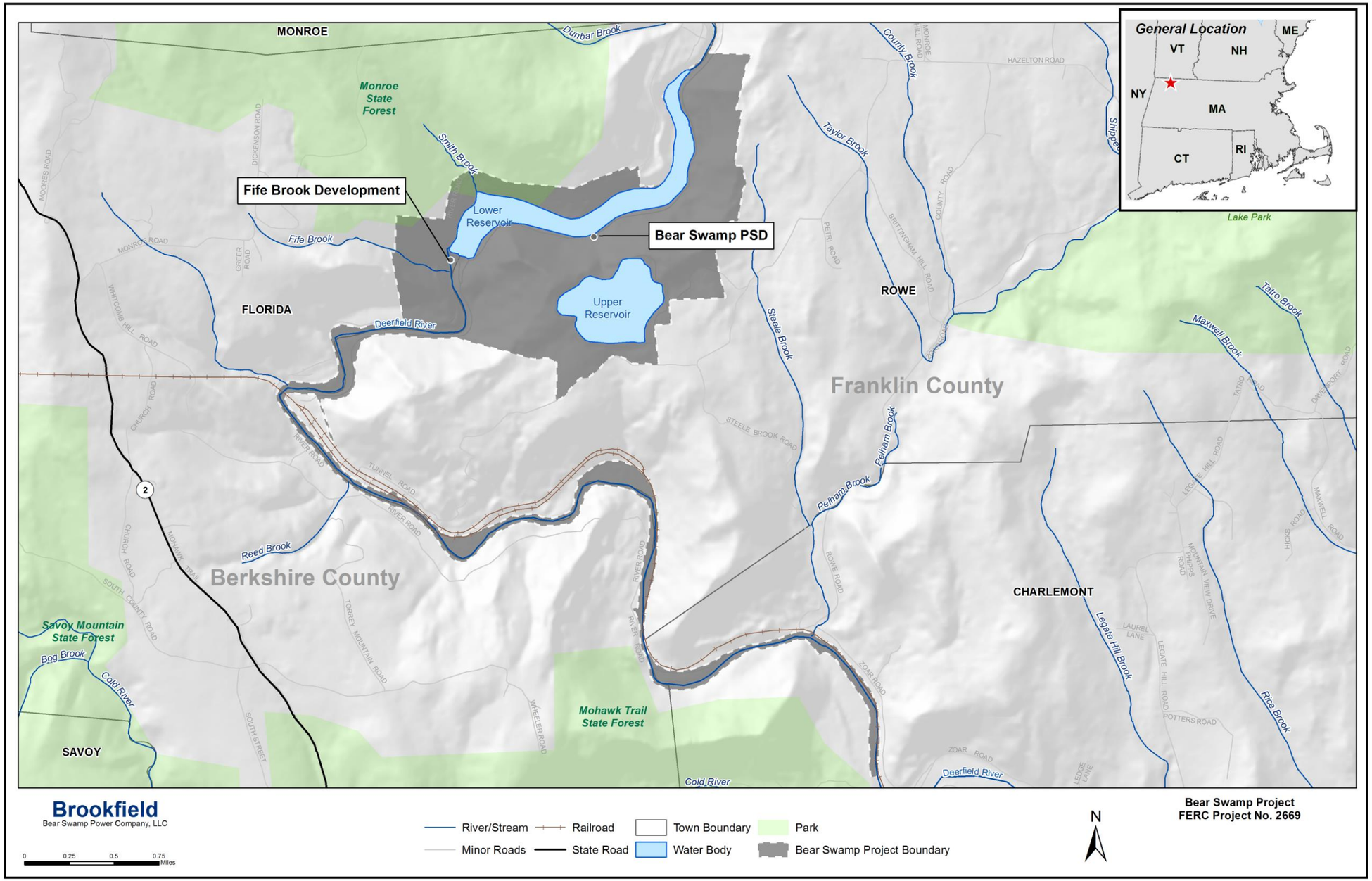
The Bear Swamp Project is located on the Deerfield River in Berkshire and Franklin Counties, Massachusetts. The Project consists of the Bear Swamp Pump Storage Development (PSD)[8] and the Fife Brook Development (FBD), a conventional hydroelectric facility. There are no lands of the United States included within the Project boundary. A Project location map is presented as Figure A.1-1.

The Bear Swamp PSD generally consists of an Upper Reservoir retained by four dikes and an emergency spillway; a submerged inlet/outlet structure and associated tunnel which bifurcates into two penstocks; an underground powerhouse containing two reversible Francis-type pump-turbine units and motor-generator units with a combined capacity of 600 MW; two tailrace tunnels leading to an individual inlet/outlet structure in the Lower Reservoir; and the Lower Reservoir (Fife Brook impoundment) formed by the Fife Brook Dam on the Deerfield River. The FBD generally consists of the Fife Brook Dam and impoundment, which is common to both developments; a Tainter gate spillway structure; a concrete intake structure; and a single penstock leading to a concrete powerhouse containing one conventional Francis turbine-generator unit with a capacity of 10 MW.

The Bear Swamp PSD is operated as a pumped storage facility generally producing electricity during daylight hours, with water from the Lower Reservoir (Fife Brook impoundment) pumped to the Upper Reservoir overnight. The Fife Brook Development is operated as a run-of-release system, in response to regulated, peaking inflows from the immediately upstream Deerfield River Project's (DRP) (FERC No. 2323) Station No. 5 Development (Station No. 5), which is owned and operated by Great River Hydro, LLC (Great River or GRH).

[8] The Bear Swamp PSD powerhouse is also known as the "Jack Cockwell Station."

FIGURE A.1-1
BEAR SWAMP PROJECT LOCATION MAP



A.2 Bear Swamp PSD

A.2.1 Physical Composition, Dimensions, and General Configuration

A.2.1.1 Water-Retaining Structures

A.2.1.1.1 Upper Reservoir

The Upper Reservoir is impounded by a series of four earth-and-rockfill dikes in addition to sections of the reservoir rim formed by the existing natural topography. The dike cross-sections consist of an impervious central core of compacted glacial till supported by upstream and downstream compacted rockfill shells. Filter and transition zones separate the core rockfill zones. The two main structures are the North Dike and the South Dike. There are also two saddle dikes on the north and east sides of the upper reservoir (East Dike and Dike "A"). The total length of the four dikes is 5,280 feet.

The curved North Dike is approximately 1,300 feet long with a crest elevation of 1,606 feet[9]. Along the centerline of the dike, the embankment is approximately 130 feet high with a maximum height of 155 feet.

The South Dike is approximately 2,880 feet long with a crest elevation of 1,606 feet. The dike consists of a glacial till core with upstream and downstream compacted rockfill shell and has a maximum height of 140 feet.

The East Dike is 50 feet high and approximately 750 feet long. The extension of the North Dike (Dike "A") is 23 feet high and approximately 350 feet long. Both have crest elevations of 1,606 feet and consist of a glacial till core with compacted rockfill shell.

[9] As noted on the drawings included in Exhibit F of this application, elevations of Project features "*are based on a U.S.G.S. bench mark described as follows: 'Woodford 5 miles east of summit of hill surmounted by house, on boulder near corner barn, rounded chisel mark elevation 2267.71 as shown on page U.S.G.S. Bulletin 437.'"*(National Geodetic Vertical Datum of 1929).

An emergency spillway is located east of the North Dike extension and is excavated in bedrock. The crest of the spillway is at elevation 1,602 feet (the top of the impervious core of each dike is at elevation 1,603 feet) and the spillway is approximately 420 feet long.

Additionally, there is a submerged weir within the Upper Reservoir with a crest reported at approximately elevation 1,526 feet and which is equipped with stoplogs. The purpose of this weir is to maintain a pool of water to aid in the Upper Reservoir de-water/re-water process.

A.2.1.1.2 Fife Brook Dam

The Lower Reservoir is created by the Fife Brook Dam located on the Deerfield River. The Fife Brook Dam consists of compacted glacial till with a crest elevation of 880 feet. Integral with the Fife Brook Dam are the Tainter gate spillway structure and the concrete intake structure of the Fife Brook powerhouse, each of which are described in Section A.3.1.1 below.

A.2.1.2 Water Conveyance Structures

Water is conveyed between the Upper Reservoir and powerhouse through an inlet/outlet structure on the floor of the Upper Reservoir and a tunnel system through bedrock. The inlet/outlet structure is located between the North Dike and the South Dike and consists of a concrete apron which embeds a 40-foot-diameter opening at elevation 1,500 feet on the floor of the Upper Reservoir. This opening transitions to a 25-foot-diameter, concrete-lined tunnel consisting of a vertical section and a horizontal sloped section. The horizontal section bifurcates into two 17.5-foot-diameter, concrete-lined penstocks, which then transition to 11.0-foot-diameter, 8.5-feet-long, steel-lined sections as they enter the underground powerhouse and terminate at the spherical valves. Based on the Upper Reservoir floor elevation of 1,500 feet and a pump-turbine distributor centerline elevation of 760 feet, the gross height of the tunnel is 740 feet. The gross horizontal length of the tunnel is approximately 713 feet from the centerline of the Upper Reservoir inlet/outlet structure to the point where the tunnel meets the powerhouse.

Water is conveyed between the powerhouse and the Lower Reservoir through two concrete-lined draft tube arch tunnels that are approximately 504 feet long and 22 feet wide by 29.5 feet high. The interior radius of the arch portion of each tunnel is 11 feet, such that the rectangular portion of each tunnels' cross-section is 22 feet wide by 18.5 feet tall with the 11-foot-radius portion

atop the rectangular portion. The tunnels extend through bedrock with the concrete lining consisting of a 6-inch layer of shotcrete.

At the Lower Reservoir, the tunnels transition into a 4-bay, lower reservoir inlet/outlet structure (two, 15-foot-wide by 20-foot-high bays per draft tube tunnel). Each bay is equipped with a steel slide gate with a sill elevation of 790 feet and measuring approximately 16-feet wide and 20.6-feet high. All four bays are also equipped with trashracks consisting of $^{15}/_{16}$-inch-wide bars having 6-inch clear spacing. Each of the four steel trashracks is approximately 15-feet wide and 26.7 feet tall. The apron of the inlet/outlet structure extends approximately 150 feet beyond the trashracks.

A.2.1.3 Powerhouse

The Bear Swamp PSD powerhouse is located in a man-made underground cavern that is approximately 227 feet long by 79 feet wide, with an overall height of 182 feet to the invert of the draft tubes. Primary access is provided by the main road access tunnel, which is approximately 700 feet long and 25 feet wide by 29 feet high. Secondary access exists via the generator leads tunnel, which is approximately 600 feet long and 15 feet wide by 23 feet high. The powerhouse contains two reversible Francis-type, pump-turbine units and motor-generator units, each rated at 300 MW.

A.2.2 Impoundment Characteristics

A.2.2.1 Upper Reservoir

The 118-acre Upper Reservoir has a gross storage capacity of 8,300 acre-feet and a capacity of 5,260 acre-feet between the Upper Reservoir normal maximum full elevation of 1,600 feet and the total allowable fluctuation of 50 feet to elevation 1,550 feet. However, storage between elevations 1,555.5 feet and 1,550 feet is held for emergency/reserve conditions, and the usable

storage capacity between elevations 1,600 feet and 1,555.5 feet is 4,600 acre-feet.[10] Due to safety and security concerns, the Upper Reservoir is fenced and public access is prohibited.

A.2.2.2 Lower Reservoir (Fife Brook Impoundment)

The 152-acre Lower Reservoir is formed by the Fife Brook Dam which impounds the Deerfield River for a length of approximately 2.5 miles. The Lower Reservoir has a gross storage capacity of 6,900 acre-feet and a usable storage capacity of 4,600 acre-feet between its normal maximum full elevation of 870 feet and the total allowable fluctuation of 40 feet to elevation of 830 feet. Due to safety and security concerns, the Lower Reservoir is partially fenced and public access prohibited.

A.2.3 Generating Equipment

The underground powerhouse contains two vertical-shaft, reversible Francis-type pump turbines manufactured by Hitachi and associated vertical-shaft, semi-umbrella type motor-generators manufactured by Toshiba. A summary of the pump-turbine and generator equipment is shown in Table A.2-1 below.

In 2008 the Commission amended the license and authorized the BSPC to upgrade the turbine-generator units to increase capacity of the units.[11] The upgrade is being undertaken in a phased sequence; the Unit 2 generator was rewound in 2016 and the Unit 1 generator was rewound in 2017. The turbine units will be upgraded in the future. The total authorized capacity of the station when fully upgraded will be approximately 666 MW.

[10] The December 19, 2014 Pre-Application Document inadvertently presented usable storage capacity as 4,900 acre-feet. BSPC has since confirmed usable storage within both the upper and lower reservoirs as 55,660 cfs-hr, or 4,600 acre-feet.

[11] As analyzed in, and authorized by the Commission's August 13, 2008 *Order Amending License And Approving Revised Exhibit A*, each unit's upgraded capacity, upon completion, will be 333 MW with maximum generation and pump flows of 6,200 cfs and 5,120 cfs respectively. The Commission's Order determined that the upgrade would "allow the licensee to enhance the efficiency of the project, while increasing the installed capacity by 66 MW" and that "this order does not constitute a major federal action significantly affecting the quality of the human environment".

TABLE A.2-1
BEAR SWAMP PSD PUMP TURBINE AND MOTOR-GENERATOR EQUIPMENT

	Unit 1	Unit 2
Pump-Turbine		
Manufacturer	Hitachi	Hitachi
Type	Vertical Francis-type, Reversible pump turbine	Vertical Francis-type, Reversible pump turbine
Rated Power (hp)	400,000	400,000
Rated Head (ft)	750	750
Speed (rpm)	225	225
Discharge Capacity (cfs)	5,430	5,430
Pump Capacity (cfs)	4,520	4,520
Motor-Generator		
Manufacturer	Toshiba	Toshiba
Rated PF	0.9	0.9
Rating (kVA)	333,000	333,000
Rating (MW)	300	300

A.2.4 Transmission Facilities

Two 13.8-kilovolt (kV) motor-generator leads pass through the generator leads tunnel (described above) and terminate at two 330-megavolt ampere (MVA) transformers. The east and west generator leads are approximately 890 and 900 feet long, respectively. The 330-MVA transformers step-up voltage from 13.8 kV to 230 kV. Transmission lines consist of two, single-circuit 230-kV transmission lines that extend from the step-up transformers to the point of Project demarcation at the Bear Swamp upper switchyard (owned and operated by National Grid). The lengths of the two 230-kV, above-ground transmission lines measure approximately 4,075 feet for the south line and approximately 3,960 feet for the north line. See Exhibit G.

A.2.5 Ancillary Equipment

Each motor-generator unit is equipped with direct connected starting motors for pump start and is direct connected to rotating exciters to provide motor and generator excitation. The

powerhouse also contains a 606-ton-capacity gantry crane with two 30-ton auxiliary hooks, a control and switchboard room, bus structure, two station service transformers, switching equipment, governors, pumps, and miscellaneous accessory equipment.

A.3 Fife Brook Development

A.3.1 Physical Composition, Dimensions, and General Configuration

A.3.1.1 Water-Retaining Structures

The Fife Brook Dam is approximately 890 feet long and 130 feet high with a crest elevation of 880 feet. Integral with the Fife Brook Dam is the concrete Tainter gate spillway structure which consists of two 36.0-foot-wide, 40-foot-tall Tainter gate bays which sit on a concrete ogee spillway with a crest elevation of 830 feet. The roadway bridge over the Tainter gate bays is at elevation 880 feet. The Tainter gate spillway structure discharges to a bedrock channel between the powerhouse and western shore.

A.3.1.2 Water Conveyance Structures

The intake to the Fife Brook powerhouse is integral with the Fife Brook Dam and adjacent to the eastern abutment of the Tainter gate spillway structure. The single intake is equipped with trashracks consisting of 0.5-inch-wide bars having 3.0-inch clear spacing and measuring 11.2 feet wide and 24 feet tall. The intake is also equipped with a 15-foot by 18-foot headgate and hoist, and stoplog slots upstream of the headgate. A 10-foot-diameter steel penstock, encased in concrete and approximately 200 feet long, conveys water to the powerhouse. The 21-foot-long draft tube is steel lined to its low point elevation of 731.5 feet and then formed in concrete to the tailrace.

A 30-inch-diameter pipe runs parallel to the penstock and provides the minimum flow release when the Fife Brook unit is not in operation. The pipe is gated at its intake with a 30-inch slide gate, and the pipe centerline at the intake is at elevation 817.5 feet. The pipe extends 325 feet before bifurcating into two pipes within the powerhouse: a 20-inch-diameter and 24-inch-

diameter pipe, with each approximately 55 feet long and individually controlled by gates within the powerhouse. The pipes and associated gates are sized to pass the required 125 cfs minimum flow when the Fife Brook impoundment is at its low operating elevation of 830.0 feet.

A.3.1.3 Powerhouse

The Fife Brook powerhouse consists of a superstructure of reinforced concrete with a pre-cast beam roof. The dimensions of the Fife Brook powerhouse are approximately 79.25-feet long, by 44-feet wide by 94-feet tall. The powerhouse houses a single Francis-type turbine and generator unit with an authorized installed capacity of 10.0 MW.

A.3.2 Impoundment Characteristics

The 152-acre Lower Reservoir is formed by the Fife Brook Dam which impounds the Deerfield River for a length of approximately 2.5 miles. The Lower Reservoir has a gross storage capacity of 6,900 acre-feet and a usable storage capacity of 4,600 acre-feet between its normal maximum full elevation of 870 feet and the total allowable fluctuation of 40 feet to elevation of 830 feet. Due to safety and security concerns, the Lower Reservoir is partially fenced and public access is prohibited.

A.3.3 Generating Equipment

The powerhouse contains a single, vertical-shaft Francis turbine manufactured by James Leffel & Co. The turbine is rated at 13,500 horsepower (hp) (10 MW) at a net head of 98 feet, a speed of 200 rotations per minute (rpm), and discharge capacity of 1,400 cfs. The maximum discharge of the turbine is 1,540 cfs, and the minimum discharge relates to a nominal output of 3 MW, which corresponds to approximately 650 cfs when the impoundment is at elevation 830 feet and approximately 270 cfs when at elevation 870 feet.

The turbine is direct-connected to a vertical-shaft generator manufactured by Westinghouse rated at 13,800 volts (V), 200 rpm, 80° temperature rise, 12,500 kilovolt amperes (kVA) and 0.9 power factor (PF). Excitation is achieved via a shaft-driven exciter rated at 80 kilowatts (kW) and 250 V. Although the generator kVA and PF ratings of 12,500 kVA and 0.9 PF, respectively,

yield a generator capacity of 11.25 MW, the authorized installed capacity of Fife Brook is considered to be 10 MW as a result of the lesser turbine rated capacity of 13,500 hp (10 MW).

A.3.4 Transmission Facilities

The Fife Brook Development has no generator step-up transformer. The 13.8-kV output from the generator is transmitted at 13.8 kV via underground conduit for a distance of approximately 860 feet to a point just beyond the Tainter gate structure and then overhead for approximately 7,060 feet to the Station 5 substation (owned by Great River). See Exhibit G.

A.3.5 Ancillary Equipment

The powerhouse also contains a 60-ton-capacity overhead bridge crane, controls, station service and switching equipment, governors, pumps, and miscellaneous accessory equipment.

A.4 Lands of the United States

There are no lands of the United States within the Project boundary.

Exhibit B

Project Operation and Resource Utilization

B.1 Description of Operations

B.1.1 General Project Description and Overview

B.1.1.1 Drainage Basin Description

The Bear Swamp Project is located along the Deerfield River in Franklin and Berkshire counties, Massachusetts. The Deerfield River rises in the towns of Glastenbury and Stratton in the Green Mountains of southern Vermont. From its headwaters, the main stem of the Deerfield River flows approximately 70 miles to its confluence with the 280-mile-long Connecticut River in the City of Greenfield, Massachusetts (Massachusetts Executive Office of Energy and Environmental Affairs [MEOEEA] 2004a, FERC 1996). The Deerfield River descends from an elevation of approximately 2,130 feet at its headwaters in the Green Mountains to an elevation of 108 feet at its confluence with the Connecticut River (Appalachian Mountain Club [AMC] 2007). The total drainage area of the Deerfield River Basin is 665 square miles, with a drainage area of 254 square miles at the Bear Swamp Project. The Deerfield River is considered a "working river" in that it has been used for hydroelectric generation for over 100 years. Hydroelectric impoundments have become an "integral part of the river's ecologic and recreational character" (MEOEEA 2004a). There are a total of 11 hydroelectric developments on the Deerfield River, comprising three separate projects licensed by the FERC (Table B.1-1 and Figure B.1-1). These Projects consist of:

- **Deerfield River Project (FERC No. 2323)** – Great River owns and operates the DRP located in Bennington and Windham counties in Vermont, and in Berkshire and Franklin counties in Massachusetts. The DRP consists of one seasonal storage development and seven peaking developments: the Somerset, Searsburg, and Harriman developments in Vermont, and the Sherman, Station No. 5, Station No. 4, Station No. 3, and Station No.2 developments in Massachusetts.

- **Bear Swamp Project (FERC No. 2669)** – BSPC owns and operates the Bear Swamp Project which includes the Bear Swamp PSD and the FBD located in between GRH's Station No. 5 and Station No. 4. The Station No. 5 outflows constitute the inflows to the BSP's Lower Reservoir which subsequently comprise the entirety of the available operating flows for the FBD.

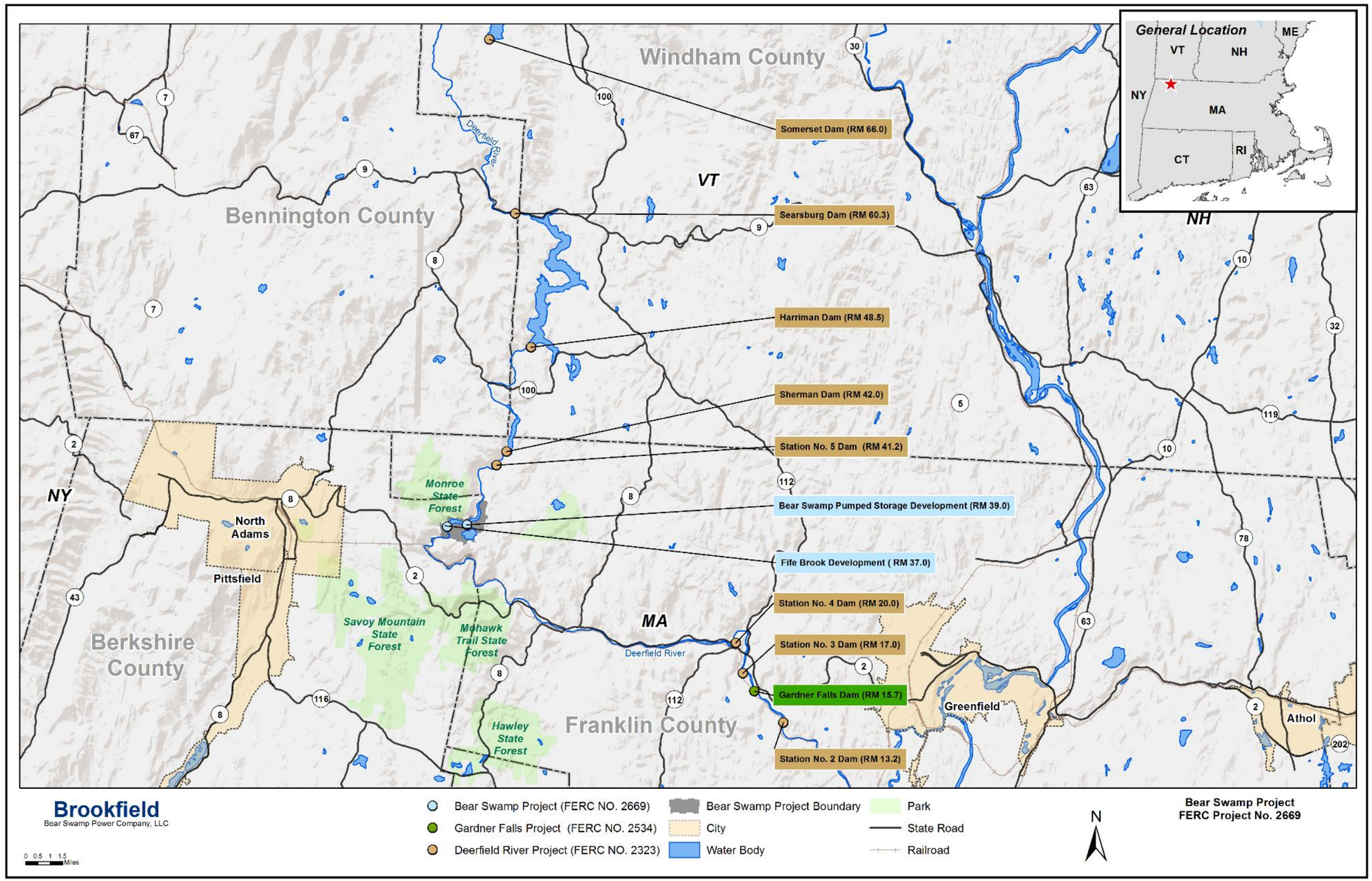
- **Gardners Falls Project (FERC No. 2334)** – Nautilus Hydro, LLC (Nautilus) owns and operates the single-development Gardner Falls Project located downstream from GRH's Station No. 3 Development.

TABLE B.1-1
HYDROELECTRIC DEVELOPMENTS ON THE DEERFIELD RIVER

Development	Licensee	State	River Mile*	Capacity (MW)	Mode of Operation
Somerset	GRH	VT	66.0	0	Seasonal storage
Searsburg	GRH	VT	60.3	4.2	Peaking, daily storage
Harriman	GRH	VT	48.5	33.6	Peaking, seasonal storage
Sherman	GRH	VT/MA	42.0	7.2	Peaking, weekly storage
Deerfield No. 5	GRH	MA	41.2	17.6	Peaking, daily storage
Bear Swamp PSD	BSPC	MA	39.0	600	Pumped storage, independent of Deerfield River flows
Fife Brook	BSPC	MA	37.0	10	Run-of-release in response to Deerfield No. 5 operation
Deerfield No. 4	GRH	MA	20.0	4.8	Peaking, daily storage
Deerfield No. 3	GRH	MA	17.0	4.8	Peaking, daily storage
Gardners Falls	Nautilus	MA	15.7	3.6	Peaking, daily storage
Deerfield No. 2	GRH	MA	13.2	4.8	Peaking, daily storage

*River miles are as reported in FERC's 1996 Final Environmental Impact Statement for the Deerfield River Project (FERC 1996). To the extent practicable, river miles as referenced in this DLA are based on the FERC 1996 Final Environmental Impact Statement. However, outside resources referenced in this DLA may utilize alternate river mile nomenclature.

FIGURE B.1-1
HYDROELECTRIC DEVELOPMENTS ALONG THE DEERFIELD RIVER



The overall flow regime of the Deerfield River can be generally characterized as having regular flow and stage fluctuations driven by the authorized peaking operations of the DRP. Constructed between 1911 and 1927, and spanning more than 50 miles of the Deerfield River in Vermont and Massachusetts, the eight developments of the DRP have provided for managed flows along the Deerfield River for nearly a century.

FERC issued an original license for the Bear Swamp Project in 1970[12]; the original license was subsequently amended in 1997[13] and in 2008[14]. In accordance with the existing license, the Bear Swamp PSD operates in a pumped storage mode which is characterized by the regular, scheduled movement of water from the Upper Reservoir to the Lower Reservoir (generation) and from the Lower Reservoir back to the Upper Reservoir (pumping). BSPC's FBD is limited to operating in a run-of-release mode reacting to, and passing inflows from, Station No. 5.

B.1.2 Project Operation

B.1.2.1 General Operation

The Bear Swamp Project is manned 24 hours a day, 7 days a week at the Bear Swamp PSD powerhouse. On-site staff coordinate and verify Bear Swamp PSD and FBD operations in conjunction with BSPC's North American System Control Center (NASCC) in Marlborough, Massachusetts which is also manned on a 24-7 basis. Between the NASCC and local staff, the Bear Swamp PSD is dispatched to operate in response to ISO New England and regional generation, capacity and reliability needs, and to pump back in a cost-effective manner. The FBD is operated to maintain the 125 cfs minimum flow downstream from Fife Brook facilities, provide whitewater recreation release flows as required by the existing license, and to pass flows in reaction to flows from Station No. 5.

B.1.2.2 Bear Swamp PSD

B.1.2.2.1 Normal Operations

[12] 43 FPC ¶ 568 (1970).
[13] 79 FERC ¶ 61,009, Order Amending License (1997).
[14] 124 FERC ¶ 62,127, Order Amending License and Approving Revised Exhibit A (2008).

The Upper Reservoir has a normal maximum full elevation of 1,600 feet and is typically drawn 44.5 feet (to elevation 1,555.5 feet) under normal operations; the last 5.5 feet of the 50 foot allowable drawdown to elevation 1,550 feet is held for emergency/reserve. On average, the useable storage of 4,600 acre-feet between elevations 1,600 feet and 1,555.5 feet represents approximately 3,028 megawatt-hours (MWh) of generation over a generation run time of approximately 5.3 hours. Similarly, the Lower Reservoir (Fife Brook impoundment) has normal maximum full elevation of 870 feet and has an allowable drawdown of 40 feet to elevation 830 feet. On average, the useable storage of 4,600 acre-feet between elevations 870 feet and 830 feet represents approximately 4,286 MWh of pumping energy needed to refill the Upper Reservoir over a pump run time of approximately 7.2 hours. In general, Bear Swamp PSD normal operations over a 24-hour period consist of generating with, and pumping back, some or all of the useable Upper Reservoir storage capacity within the framework described above.

B.1.2.2.2 Operation During Low Flow

The Bear Swamp PSD operates independent of varying inflow from Station No. 5; therefore, the development is not affected by low flows in the Deerfield River.

B.1.2.2.3 Operation During High Flows

The Bear Swamp PSD and its pumped-storage operation is independent of operations on the Deerfield River. However, as flood events develop and occur along the Deerfield River, BSPC will fill the Upper Reservoir and avoid Bear Swamp PSD generation, and BSPC will strive to keep the Lower Reservoir as close to the minimum elevation necessary to pass flood inflows from upstream. The largest high flow or flood risk associated with the Bear Swamp PSD is the very low probability risk of overfilling the Upper Reservoir. To mitigate this risk, multiple, redundant monitoring and action procedures exist in the form of 24-7 real-time video surveillance in both the powerhouse and NASCC, redundant, independent Upper Reservoir level monitoring systems and multi-path Supervisory Control and Data Acquisition (SCADA) and communication networks. Individually or collectively any of these systems allows for the shutdown of the station either automatically, manually by on-site staff, or remotely by NASCC staff, and the functionality of these systems is verified daily. In the unlikely event that none of these systems lead to timely shutdown, the Upper Reservoir emergency spillway is sized such

that it can accommodate the maximum Bear Swamp PSD pumping capacity without overtopping the crest elevation of any of the four upper reservoir dikes (each at elevation 1,606 feet). BSPC has safely operated and maintained the Bear Swamp PSD such that it has never had to make use of the emergency spillway.

B.1.2.3 Fife Brook Development

B.1.2.3.1 Minimum Flow Management

BSPC passes the required 125 cfs minimum flow[15] from the FBD through a bifurcated minimum flow pipe that passes through the dam and powerhouse (see Exhibit A). The system is sized to pass 125 cfs even when the Fife Brook impoundment is at its low limit elevation of 830 feet.[16]

B.1.2.3.2 Normal Operations

When the upstream Station No. 5 is generating (and regardless of whether Bear Swamp PSD is pumping, generating, or idle), the FBD will generate at a level to effectively follow the timing and magnitude of inflow provided by Station No. 5.

Each day the DRP licensee provides BSPC with its planned flow schedule for the following day, and BSPC will schedule the FBD to generally follow the DRP licensee's schedule while accounting for provision of the 125 cfs minimum flow and required whitewater releases. Based on the schedule received from the DRP licensee, BSPC publishes public notification of expected Fife Brook outflows on the Internet using the WaterLine FlowCast© system at www.h2oline.com. If the DRP licensee changes its schedule, BSPC updates the WaterLine forecast as soon as practicable and adjusts the Fife Brook schedule as necessary. When making the transition from the 125 cfs minimum flow discharge to the higher scheduled discharge level, BSPC:

a) Turns on strobe lights on Fife Brook Dam and sounds an alarm to provide visual and audible warnings, and

[15] The minimum flow required out of the Fife Brook Development (125 cfs) is greater than the minimum flow required at the upstream Station No. 5 which discharges into the Lower Reservoir (73 cfs). This imbalance is accounted for in Article 401 of the Bear Swamp Project license which allows for the "*release water from reservoir storage, if necessary, to ensure that the minimum flow of 125 cfs is met."*

[16] The minimum flow system has a theoretical maximum capacity of 163 cfs when the Fife Brook impoundment is at normal full pond elevation of 870 feet.

b) Brings the Fife Brook powerhouse up to its scheduled discharge.

When making the transition from generation back to the 125 cfs minimum flow level, the minimum flow pipe is opened first before the unit is brought off-line. In the event of a unit trip, the control system automatically opens the minimum flow system.

In the event that the Fife Brook powerhouse is out of service, then Station No. 5 inflows are passed through Fife Brook using a combination of the minimum flow pipe and Tainter gates in the same manner described above.

B.1.2.3.3 Operation During Low Flows

BSPC curtails generation at the FBD if inflows from Station No. 5 are insufficient to allow the turbine to operate without encountering cavitation conditions. In general, BSPC avoids running the 10 MW FBD below an output of approximately 3 MW (regardless of impoundment elevation) as rough operating conditions are encountered when output reaches this level. The rated discharge of the single 10 MW Fife Brook turbine is 1,400 cfs and its maximum discharge is 1,540 cfs. Since the Lower Reservoir is allowed to vary 40 feet between elevations 830 feet and 870 feet as part of authorized Bear Swamp PSD operations, the minimum discharge of the Fife Brook turbine will vary depending on elevations within the Lower Reservoir. As such, the low operating limit of Fife Brook is associated with power output instead of a specific discharge. An output of 3 MW corresponds to a discharge of approximately 650 cfs when the impoundment is at elevation 830 feet, and approximately 270 cfs when at elevation 870 feet.

B.1.2.3.4 Operation During High Flows

When Station No. 5 inflow to the Lower Reservoir exceeds the capacity of the Fife Brook turbine, the two Tainter gates are used to pass excess inflow. As summarized in Table B.1-2, the maximum combined discharge through the FBD is 64,095 cfs when the impoundment is at elevation 870 feet, and 107,113 cfs when at the dam crest elevation of 880 feet.

TABLE B.1-2
FBD DISCHARGE CHARACTERISTICS

FBD	Normal Max Pond (870.0 ft)	5 feet Above Normal Max Pond	10 feet Above Normal Max Pond
Tainter Gates (2)	62,430 cfs	75,724 cfs	105,448 cfs
Min Flow	125 cfs	125 cfs	125 cfs
Powerhouse (1 unit)	1,540 cfs	1,540 cfs	1,540 cfs
Total	**64,095 cfs**	**77,389 cfs**	**107,113 cfs**

As context, the Probable Maximum Flood (PMF) and the Inflow Design Flood (IDF) at the FBD are each calculated to be 84,000 cfs. The maximum flood of record reported by the USGS at its Charlemont gage is 56,300 cfs on September 21, 1938, and Hurricane Irene resulted in the second largest flood at Charlemont of 54,000 cfs on August 28, 2011. As significant flood events develop and occur, BSPC will fill the Upper Reservoir and avoid Bear Swamp PSD generation, and operate the Lower Reservoir to pass flood inflows from upstream.

B.1.3 Plant Factor

B.1.3.1 Bear Swamp PSD

Based on actual gross energy produced during calendar years of 2006 through 2015 and the rated plant capacity of 600 MW, the plant capacity factor for Bear Swamp PSD is estimated to be 8.58 percent.

B.1.3.2 Fife Brook Development

Based on actual gross energy produced during calendar years of 2006 through 2015 and the rated plant capacity of 10 MW, the plant capacity factor for the FBD is estimated to be 37.41 percent.

B.2 Estimated Energy Production and Dependable Capacity

B.2.1 Bear Swamp PSD

The average annual energy generation (output) and pump energy (consumption) of the Bear Swamp PSD for the period of 2006 through 2015 is 451,070 megawatt hours (MWh) and

618,293 MWh respectively. The dependable capacity (claimed capacity) is rated as 585 MW in both summer and winter.

B.2.2 Fife Brook Development

The average annual energy generation of the FBD for the period of 2006 through 2015 is 32,793 MWh. Given that the FBD operates in response to regulated, peaking inflows from Station No. 5, the dependable capacity (claimed capacity) is rated as 10 MW.

B.2.3 Flows

The Fife Brook Dam is located on the Deerfield River at RM 37.0 and has a drainage area of approximately 254 square miles. The overall flow regime of the Deerfield River can be generally characterized as having regular flow and stage fluctuations driven by the peaking operation of the DRP. Given the spatial context of BSPC's Bear Swamp Project (located in the middle of the DRP's peaking flow regime) the FBD is generally limited to operating in a run-of-release mode reacting to, and passing inflows from Station No. 5. A hydrology summary of the annual and monthly flow statistics at the FBD discharge is provided in Table B.2-1, with annual and monthly flow duration curves at the FBD included as Figure B.2-3. This hydrology was derived from an hourly outflow dataset from the FBD which is characteristic of inflows to the FBD. The dataset is for calendar years 2006 through 2015 (excluding 2010 due to approximately 6 months of missing/inaccurate data) and reflects periods before and after Hurricane Irene in 2011. The period was selected based on the availability of inflow records during the current Licensee's ownership of the Project.

TABLE B.2-1
SUMMARY OF ANNUAL AND MONTHLY RECORDED FLOWS FROM 2006 THROUGH 2015, EXCLUDING 2010

Month	Average Flow (cfs)	Minimum Flow (cfs)	Maximum Flow (cfs)
January	1,015	41	3,801
February	879	28	2,057
March	883	0	4,137
April	1,107	12	5,732
May	649	0	3,918

Month	Average Flow (cfs)	Minimum Flow (cfs)	Maximum Flow (cfs)
June	639	1	7,319
July	570	0	9,107
August	638	19	28,439
September	451	32	8,644
October	562	36	10,220
November	653	0	3,486
December	890	41	6,219
Annual	744	0	28,439

Minimum flows above represent the lowest hourly values within the dataset and relate mostly to the monitoring and recording methods in effect before Hurricane Irene. Subsequent to Hurricane Irene (and the loss of the USGS gage at the site) the Licensee revised its minimum flow monitoring plan for the FBD[17]. The original plan called for monitoring/recording flows at the gage station immediately downstream of the powerhouse. The revised plan calls for recording and summing the individual flows through the unit, the minimum flow pipe and the tainter gates. As identified in the May 18, 2012 plan and as recognized in FERC's July 26, 2012 order approving the plan, the method may briefly show flows below the required 125 cfs minimum flow as the unit starts up/shuts down and the minimum flow pipe automated valves respond. Since the data above is based on the station records for the entire period (rather than the former USGS gage for only part of the record) there are numerous times prior to Hurricane Irene where the data shows momentary discharges of less than 125 cfs as the system switched flow discharge locations. A review of the station data subsequent to the revised monitoring plan and the physical improvements to the system and method of recordation shows a substantially fewer number of momentary readings below 125cfs as the system responds to changes.

Due to the small surface area of the impoundment, evaporation is not considered to be a significant factor. Leakage at the Fife Brook Dam is also not a significant contributor to downstream flows.

[17] The FERC approved the revised minimum flow monitoring plan by order dated July 26, 2012 (140 FERC ¶ 62,079).

B.2.4 Area-Capacity Curves

B.2.4.1 Bear Swamp PSD

Usable reservoir storage volume curves for the Upper Reservoir and Lower Reservoir are presented as FIGURE B.2-1 and Figure B.2-2.

FIGURE B.2-1
UPPER RESERVOIR NORMAL USEABLE STORAGE VOLUME CURVE

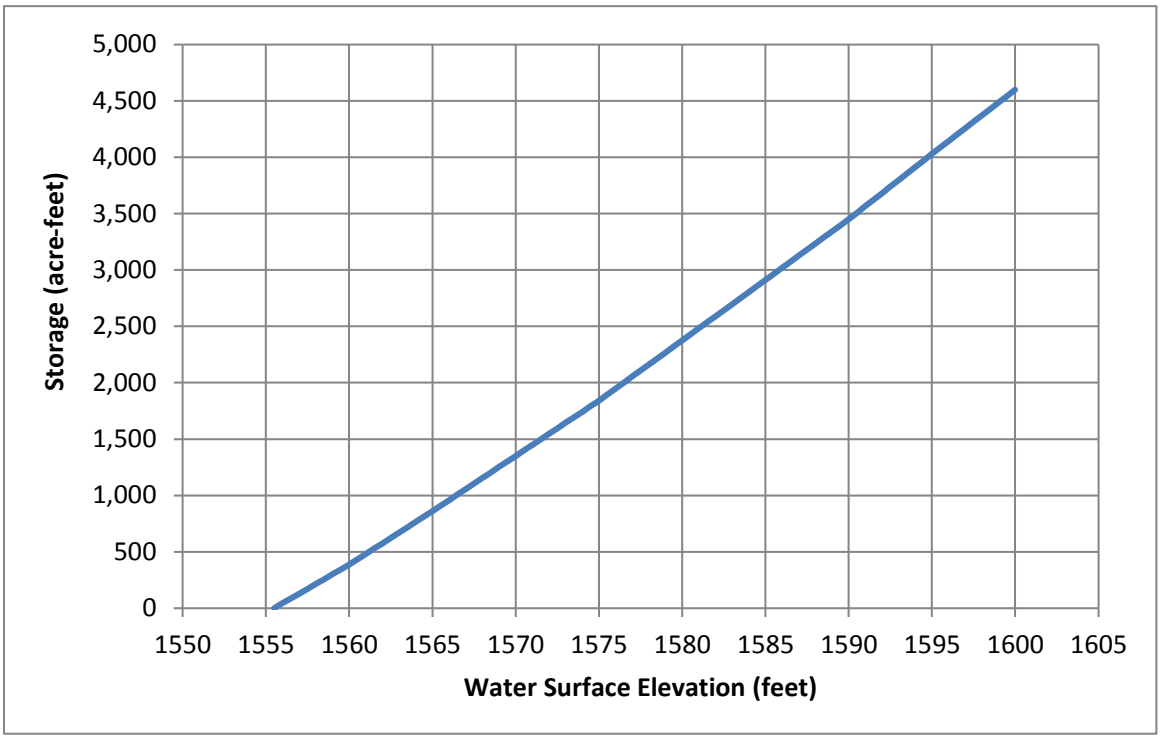
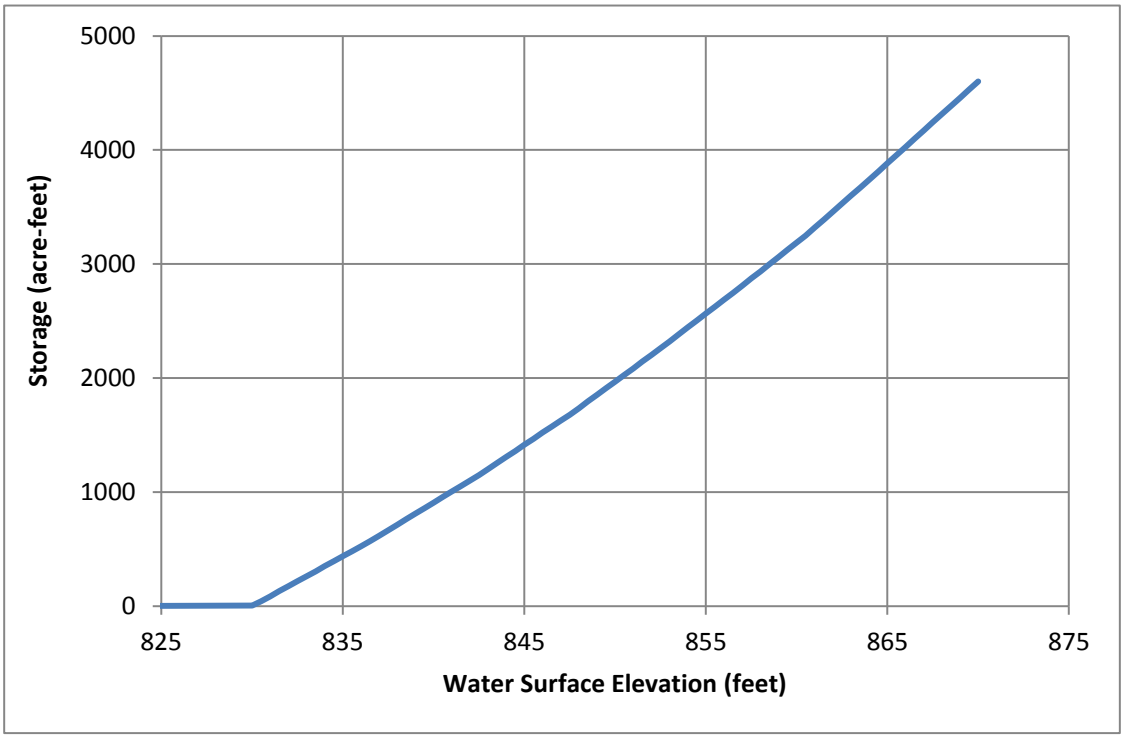


FIGURE B.2-2
LOWER RESERVOIR NORMAL USEABLE STORAGE VOLUME CURVE



B.2.4.2 Fife Brook Development

Given that the FBD generally operates in a run-of-release manner, an impoundment rule curve is not applicable or germane to the Fife Brook Development. However, the area-capacity storage curve associated with the Lower Reservoir (Fife Brook impoundment) is shown above as it relates to the Bear Swamp PSD.

B.2.5 Hydraulic Capacity

The maximum rated discharge of the two Bear Swamp PSD pump-turbines is 5,430 cfs in generation mode and 4,520 cfs in pump mode (10,860 cfs and 9,040 cfs combined generation and pump mode respectively). Although there is no specified rated minimum pump-turbine discharge, neither of the two Bear Swamp PSD units are typically set to operate below 58% wicket gate opening for extended periods of time in either generation or pump mode.[18]

[18] As analyzed in, and authorized by the Commission's August 13, 2008 Order Amending License And Approving Revised Exhibit A, each unit's upgraded capacity, upon completion (expected by 2022), will be 333 MW with maximum generation and pump flows of 6,200 cfs and 5,120 cfs respectively. The Commission's Order determined that the upgrade would

The rated discharge of the single 10 MW Fife Brook turbine is 1,400 cfs and its maximum discharge is 1,540 cfs. Since the Fife Brook impoundment is allowed to vary 40 feet between elevations 830 feet and 870 feet as part of authorized Bear Swamp PSD operations, the minimum discharge of the Fife Brook turbine will vary depending on elevations within the Fife Brook impoundment. As such, the low operating limit of Fife Brook is associated with power output instead of a specific discharge. In general, BSPC avoids running the 10 MW FBD below an output of approximately 3 MW (regardless of impoundment elevation) as rough operating conditions (cavitation) are encountered when output reaches this level. An output of 3 MW corresponds to a discharge of approximately 650 cfs when the impoundment is at elevation 830 feet, and approximately 270 cfs when at elevation 870 feet.

B.2.6 Tailwater Rating Curve

B.2.6.1 Bear Swamp PSD

The Bear Swamp PSD operates in the context of the gross head difference between upper and lower reservoir elevations available under any given condition. As such a site specific tailwater rating curve is not applicable or germane to the Bear Swamp PSD.

B.2.6.2 Fife Brook Development

A tailwater rating curve for the FBD based on recorded flows and tailwater elevations is presented as Table B.2-2.

TABLE B.2-2
FIFE BROOK DEVELOPMENT TAILWATER RATING CURVE

Stage (feet, msl)	Flow (cfs)
748.5	0
750	125
753.7	2,000
755	3,250
756	5,000

"allow the licensee to enhance the efficiency of the project, while increasing the installed capacity by 66 MW" and that "this order does not constitute a major federal action significantly affecting the quality of the human environment".

Stage (feet, msl)	Flow (cfs)
759.3	15,000
761.5	30,000

B.2.7 Powerplant Capacity versus Head

B.2.7.1 Bear Swamp PSD

Powerplant capacity versus head for the Bear Swamp PSD is shown in Table B.2-3.

TABLE B.2-3
BEAR SWAMP PSD POWERPLANT CAPACITY VERSUS HEAD

Bear Swamp PSD	685 Feet Gross Head	728 Feet Gross Head	770 Feet Gross Head
Min Power (MW)	161	180	208
Max Power (MW)	498	548	600

B.2.7.2 Fife Brook Development

Powerplant capacity versus head for the FBD is shown in Table B.2-4.

TABLE B.2-4
FBD POWERPLANT CAPACITY VERSUS HEAD

FBD	76 Feet Gross Head	96 Feet Gross Head	120 Feet Gross Head
Min Power (MW)	3.0	3.0	3.0
Max Power (MW)	5.8	9.0	10.0

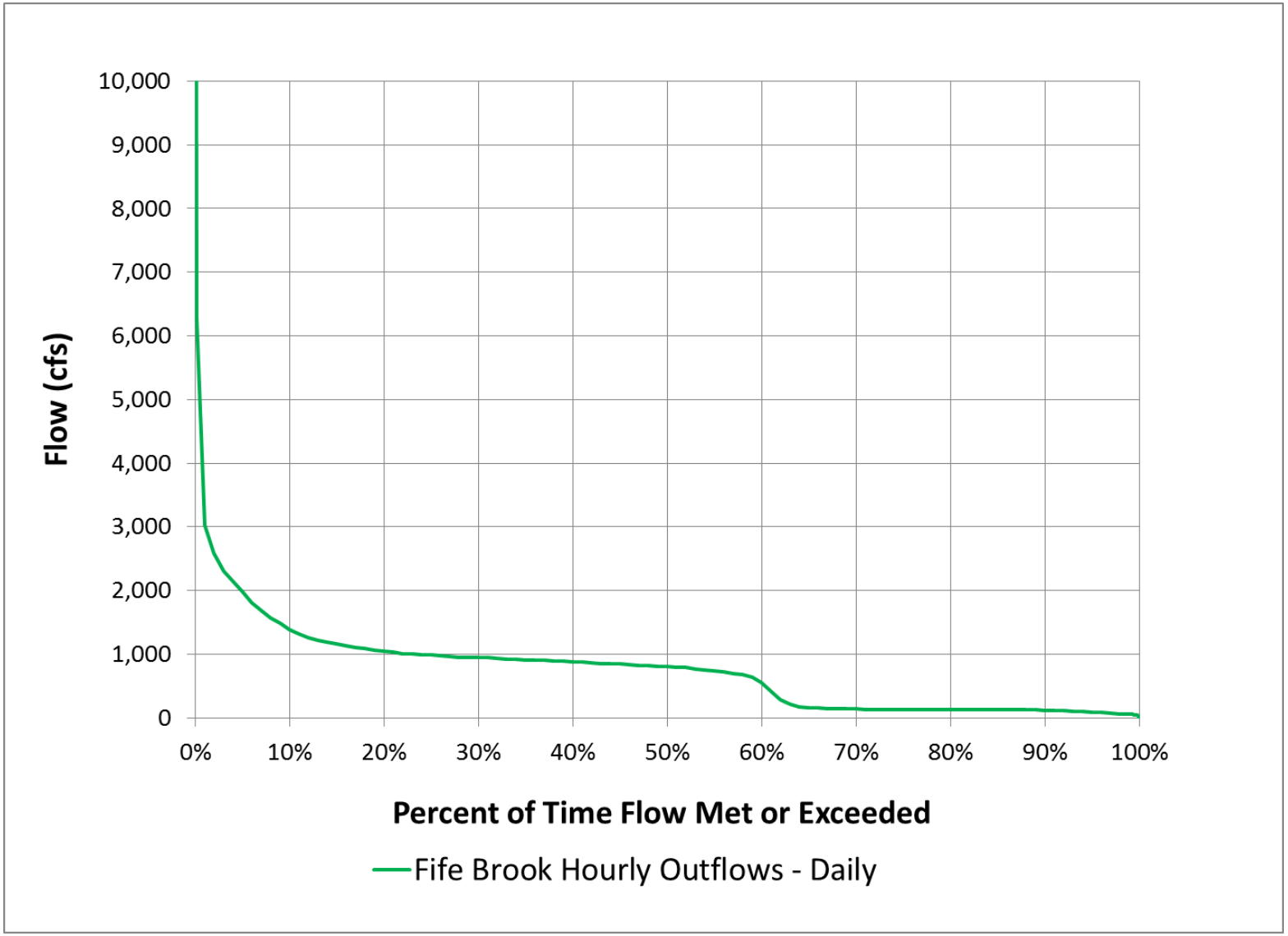
B.3 Statement of Power Utilization

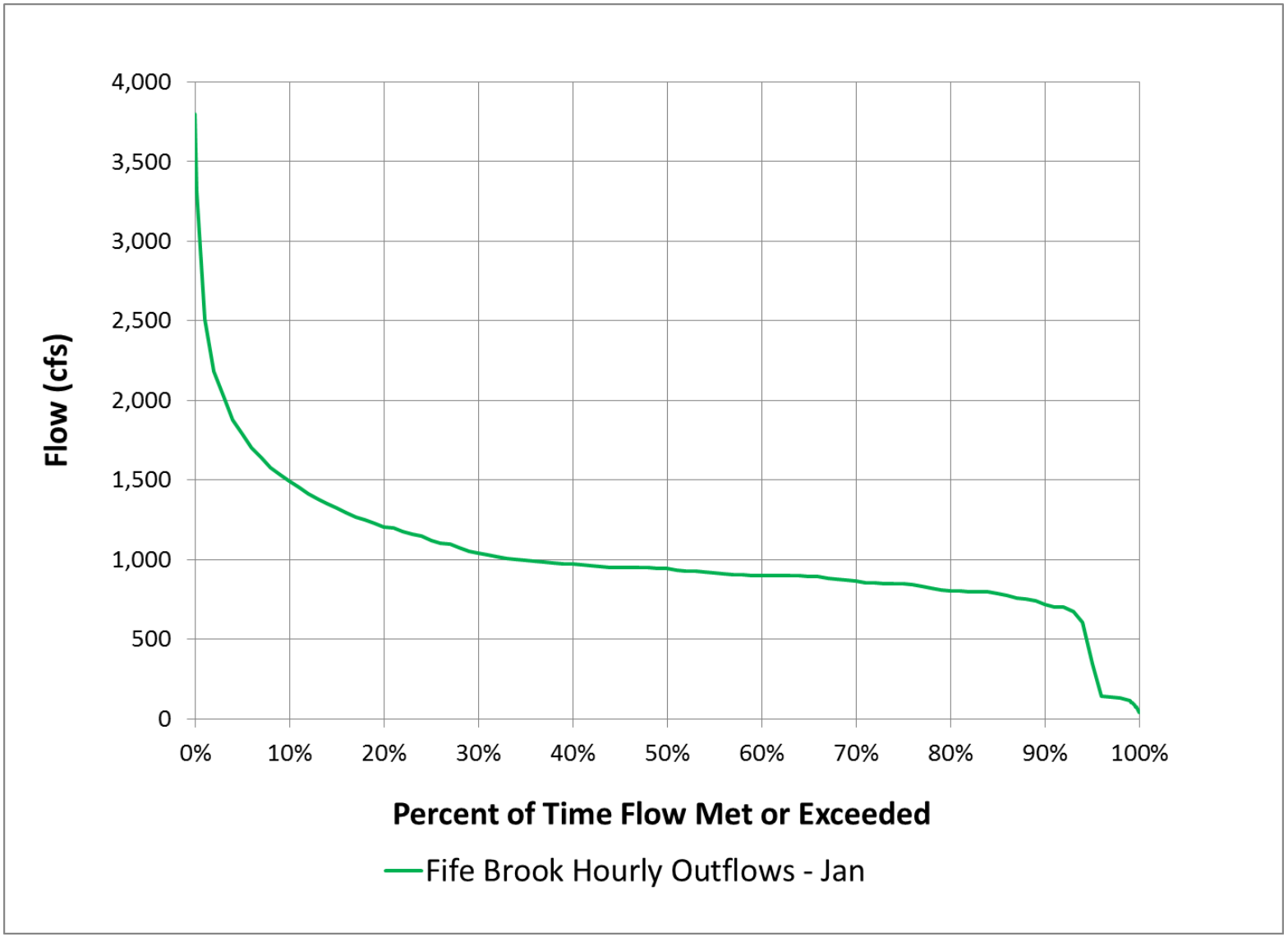
The Licensee sells all of the electricity generated at the Project into ISO New England, with approximately 100 MW of capacity committed to a utility under a power purchase agreement until April, 2021.

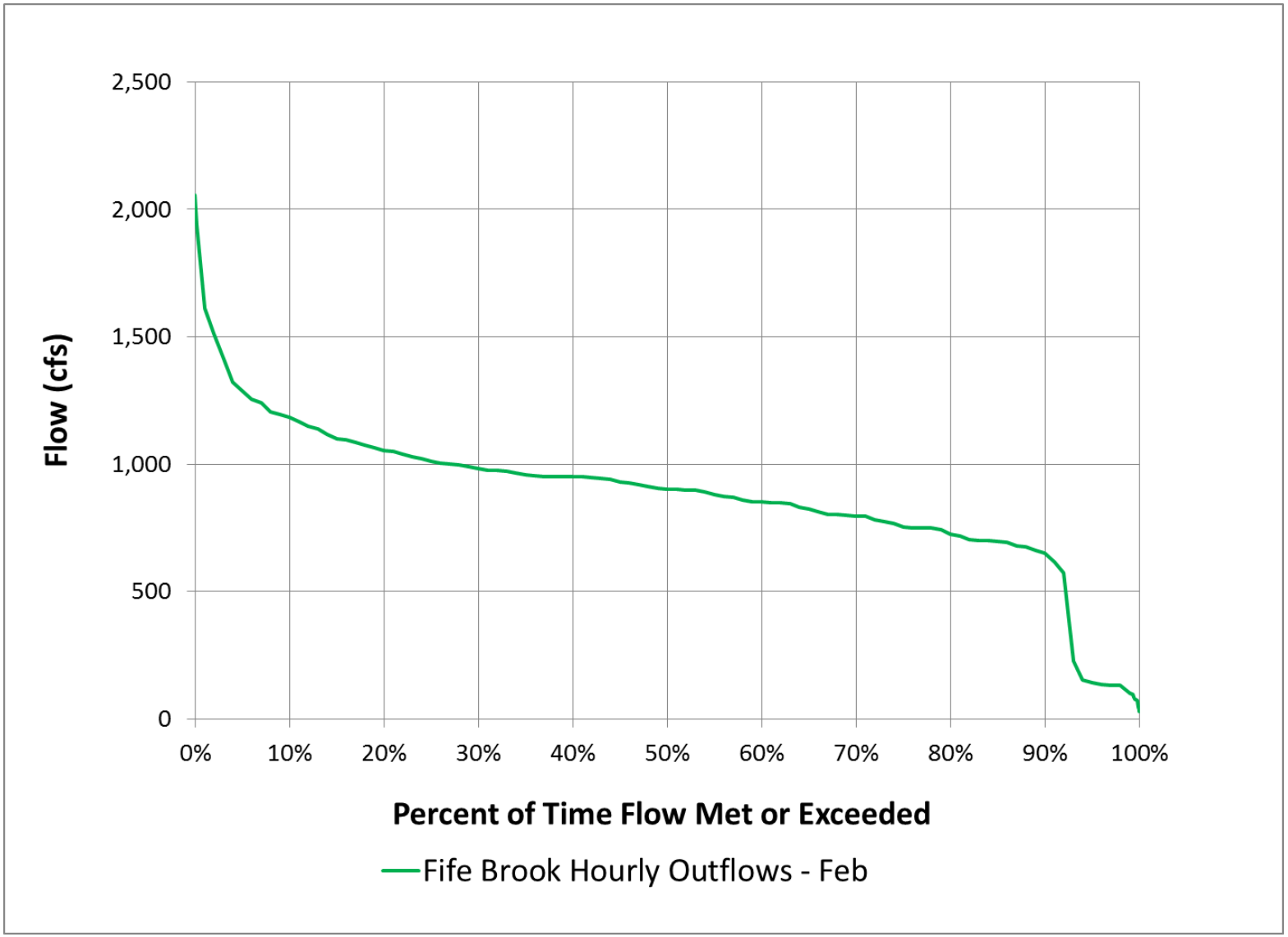
B.4 Future Development

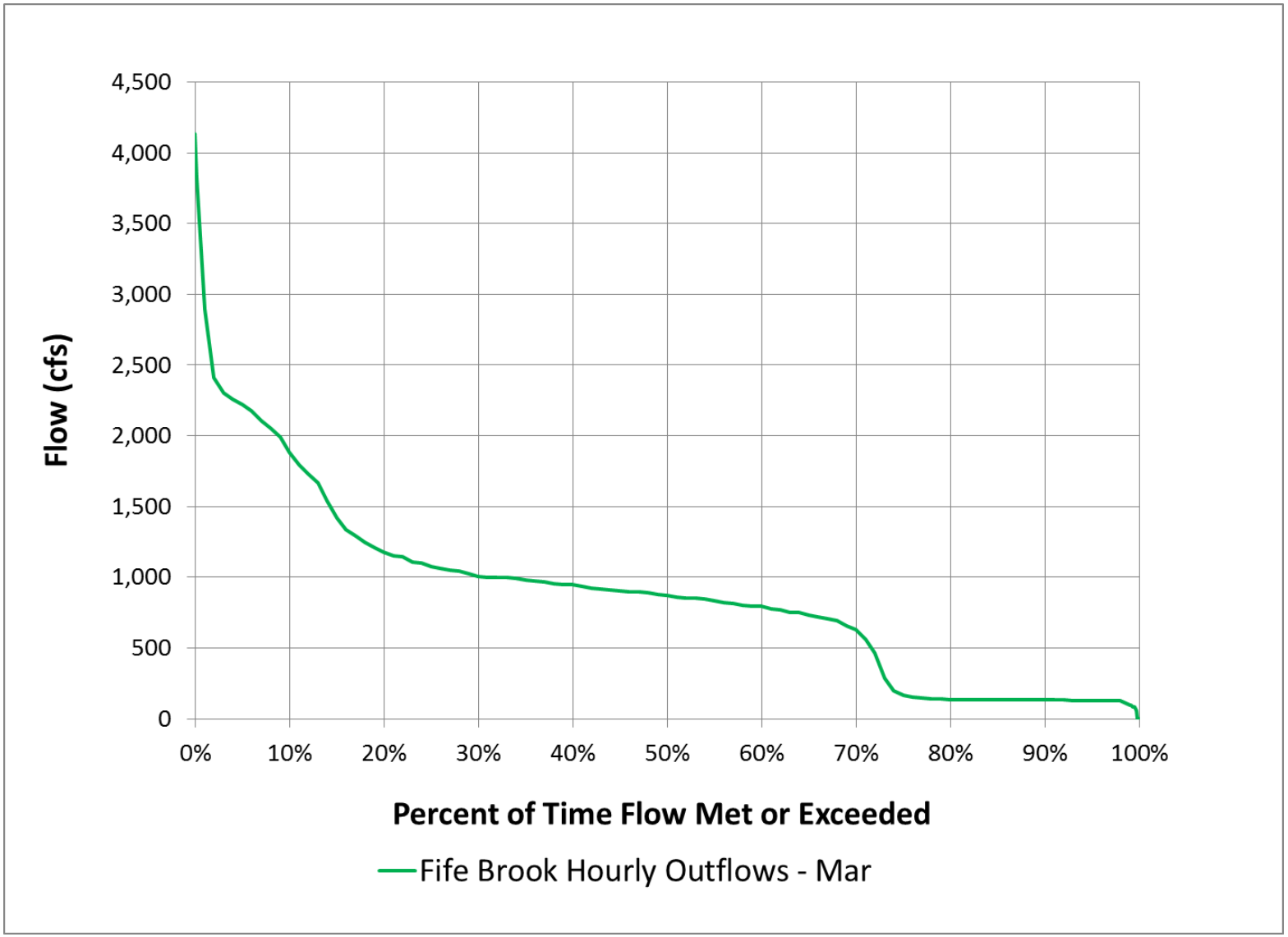
BSPC has no future development plans proposed as part of this relicensing proceeding.

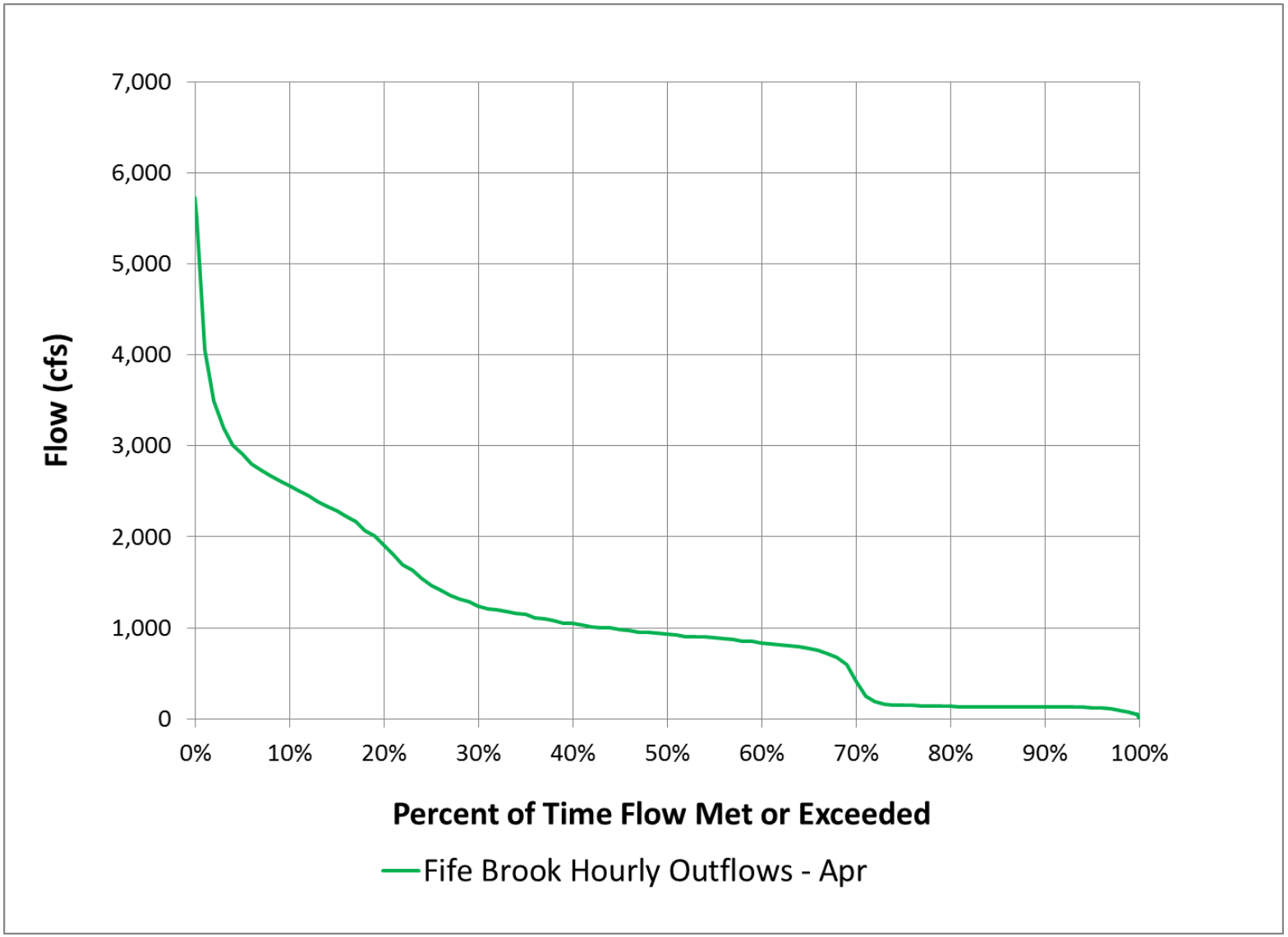
FIGURE B.4-3
FLOW DURATION CURVES

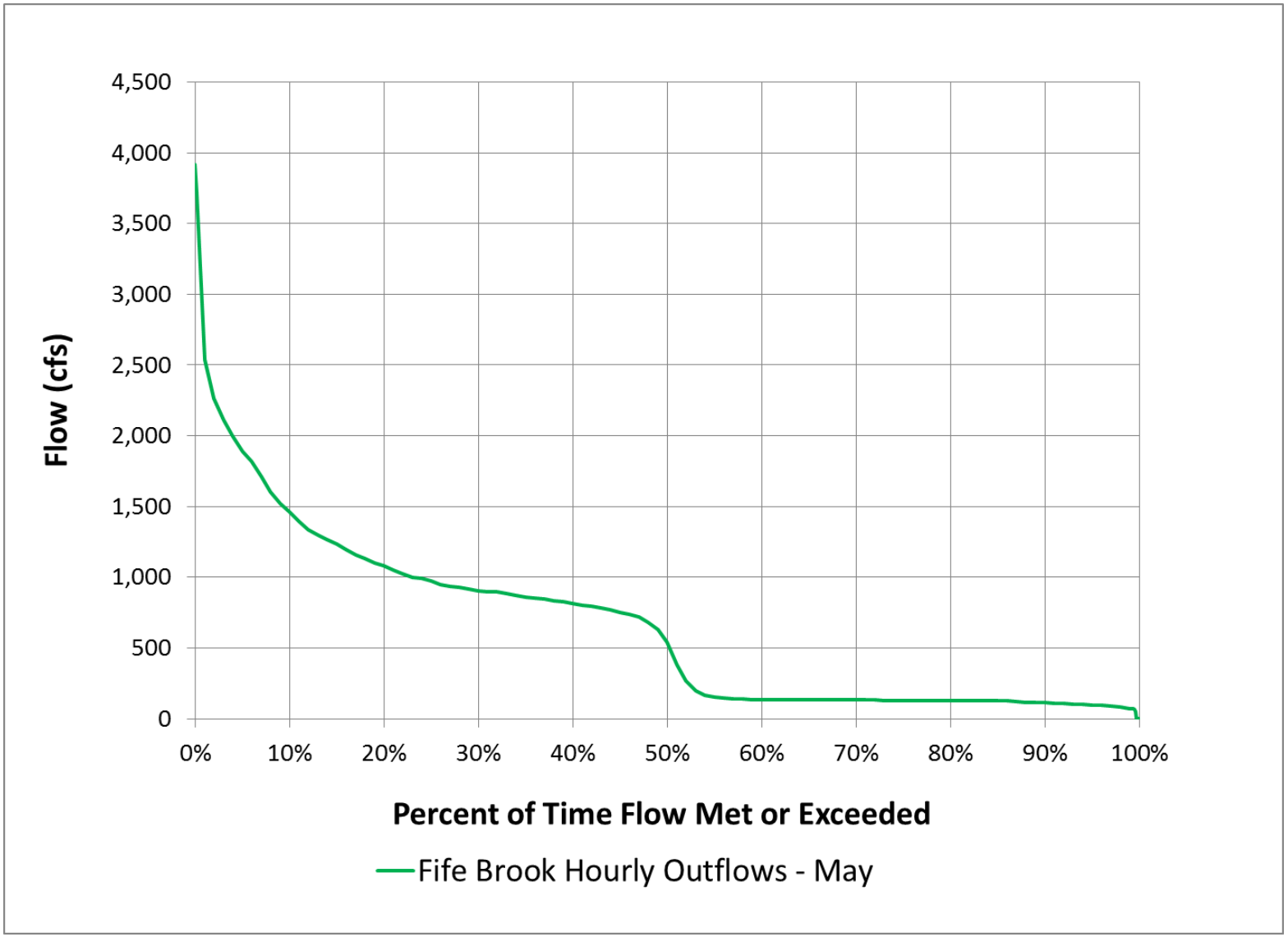


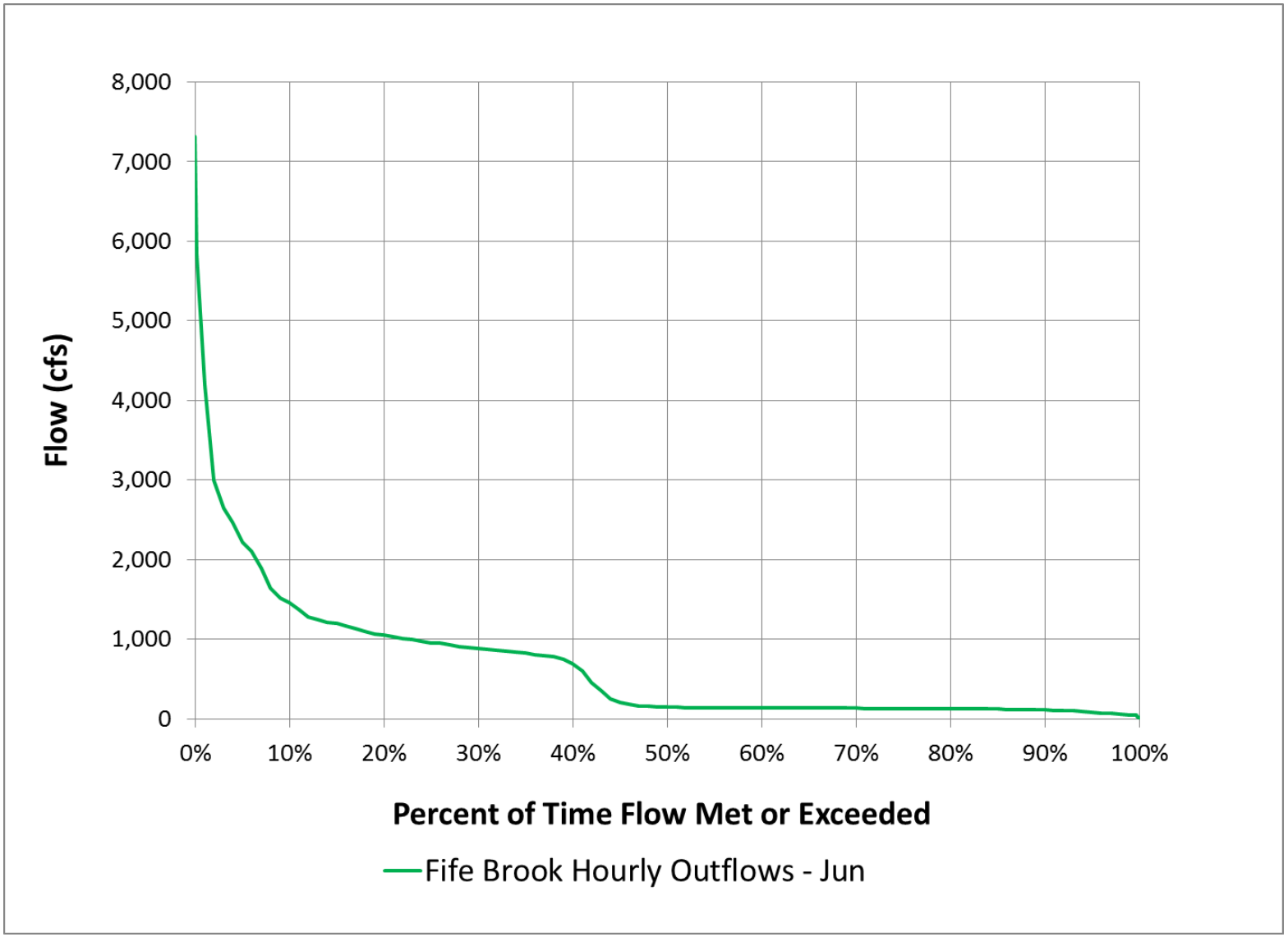


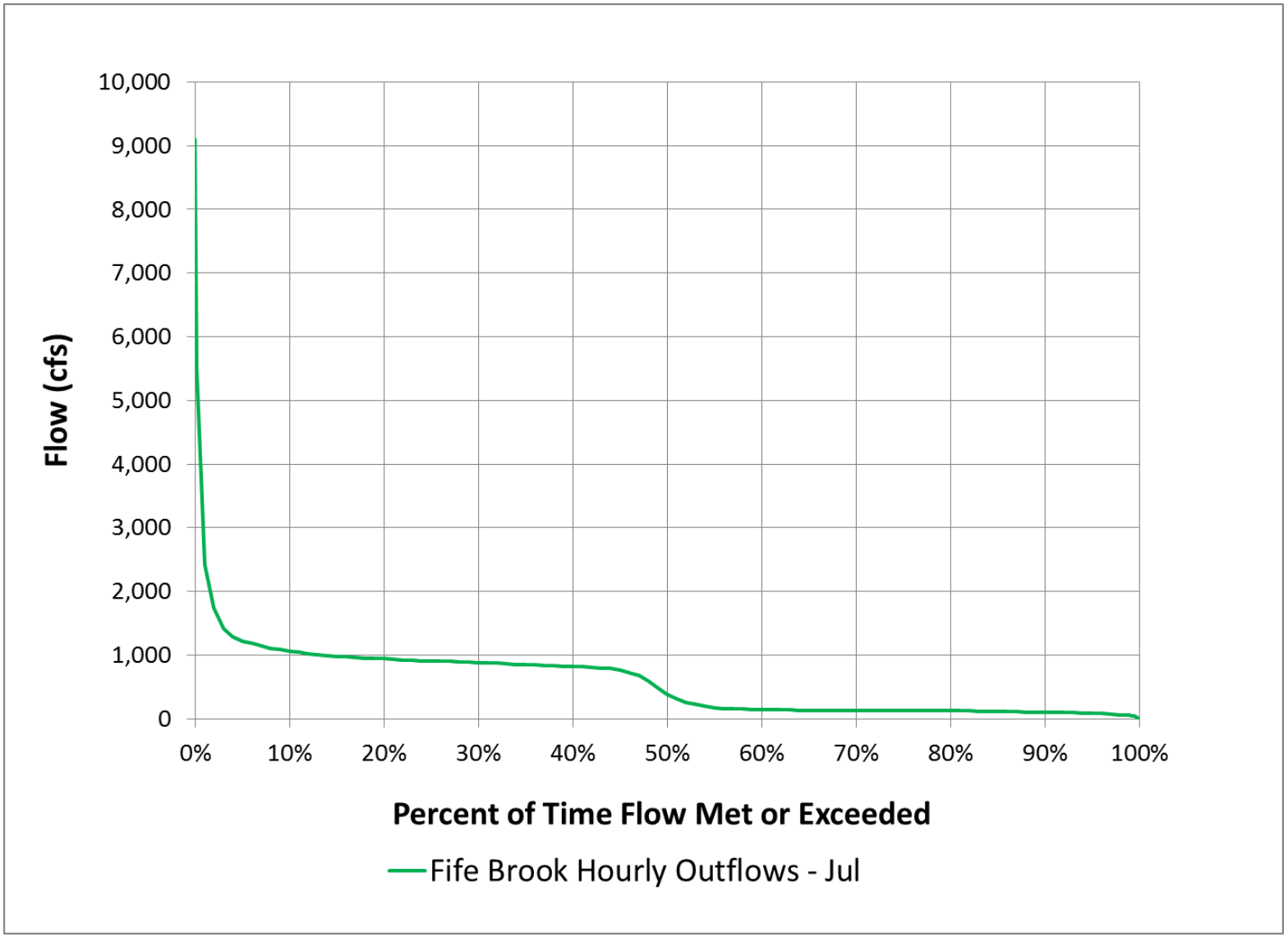


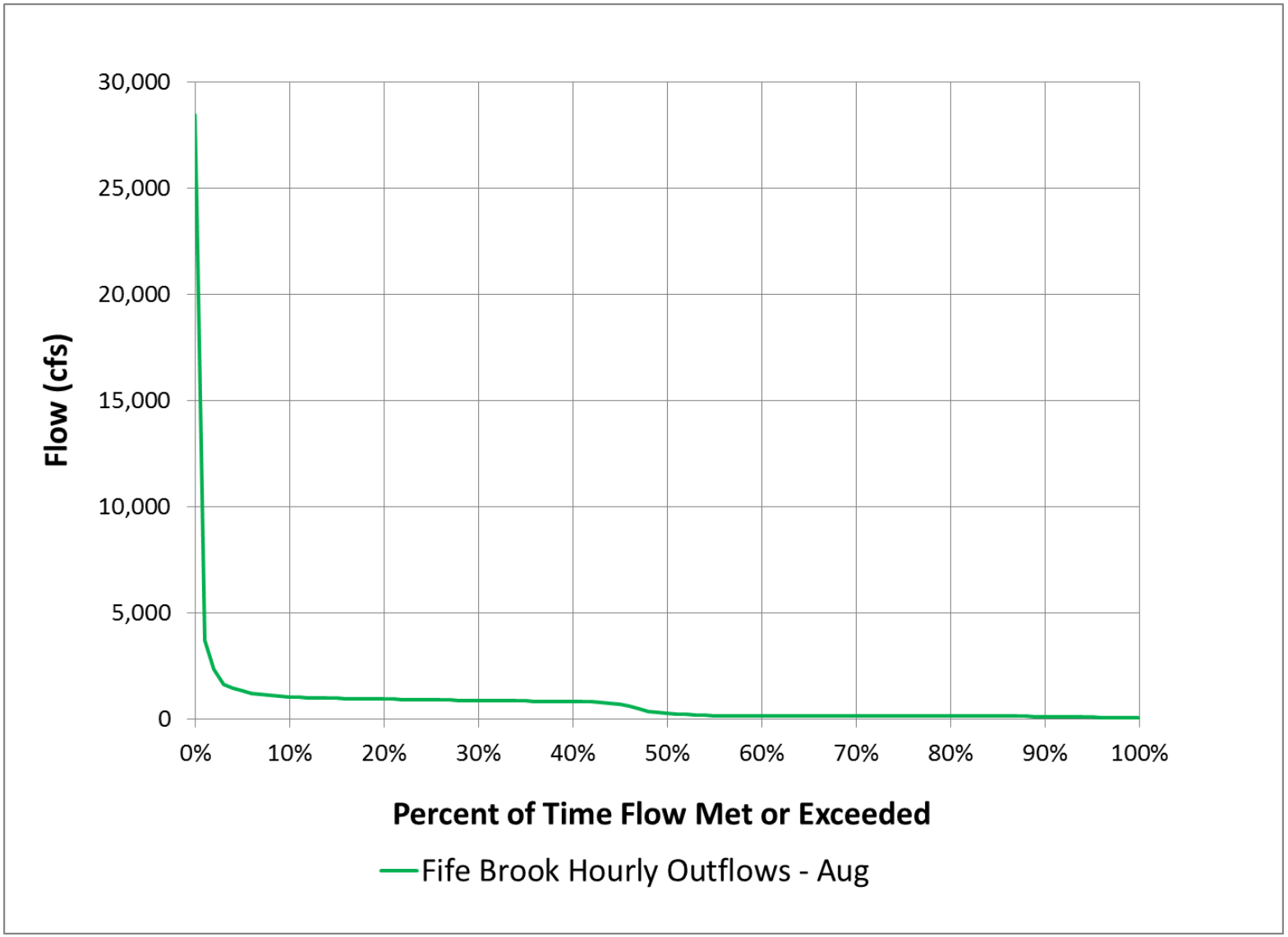


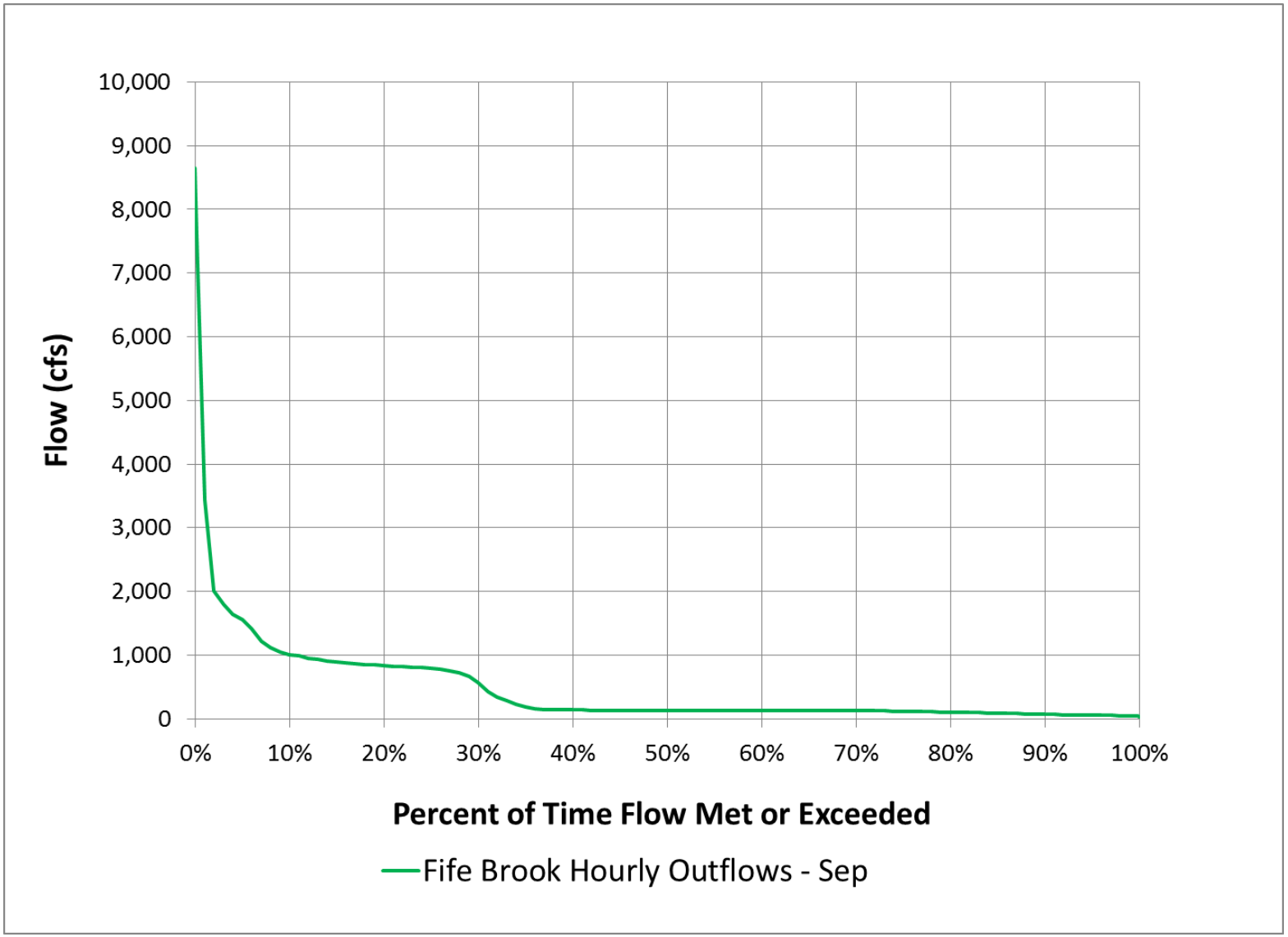


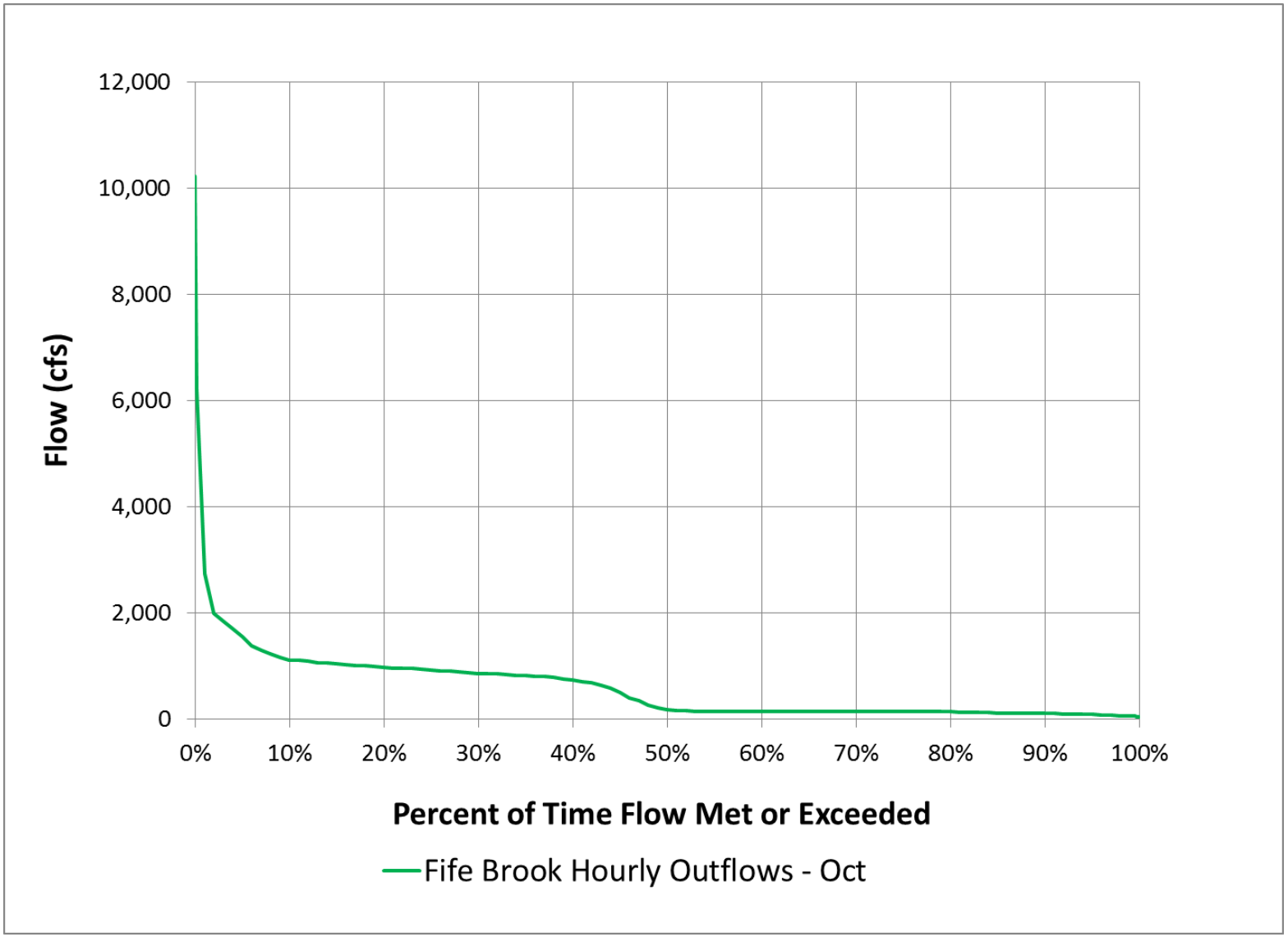


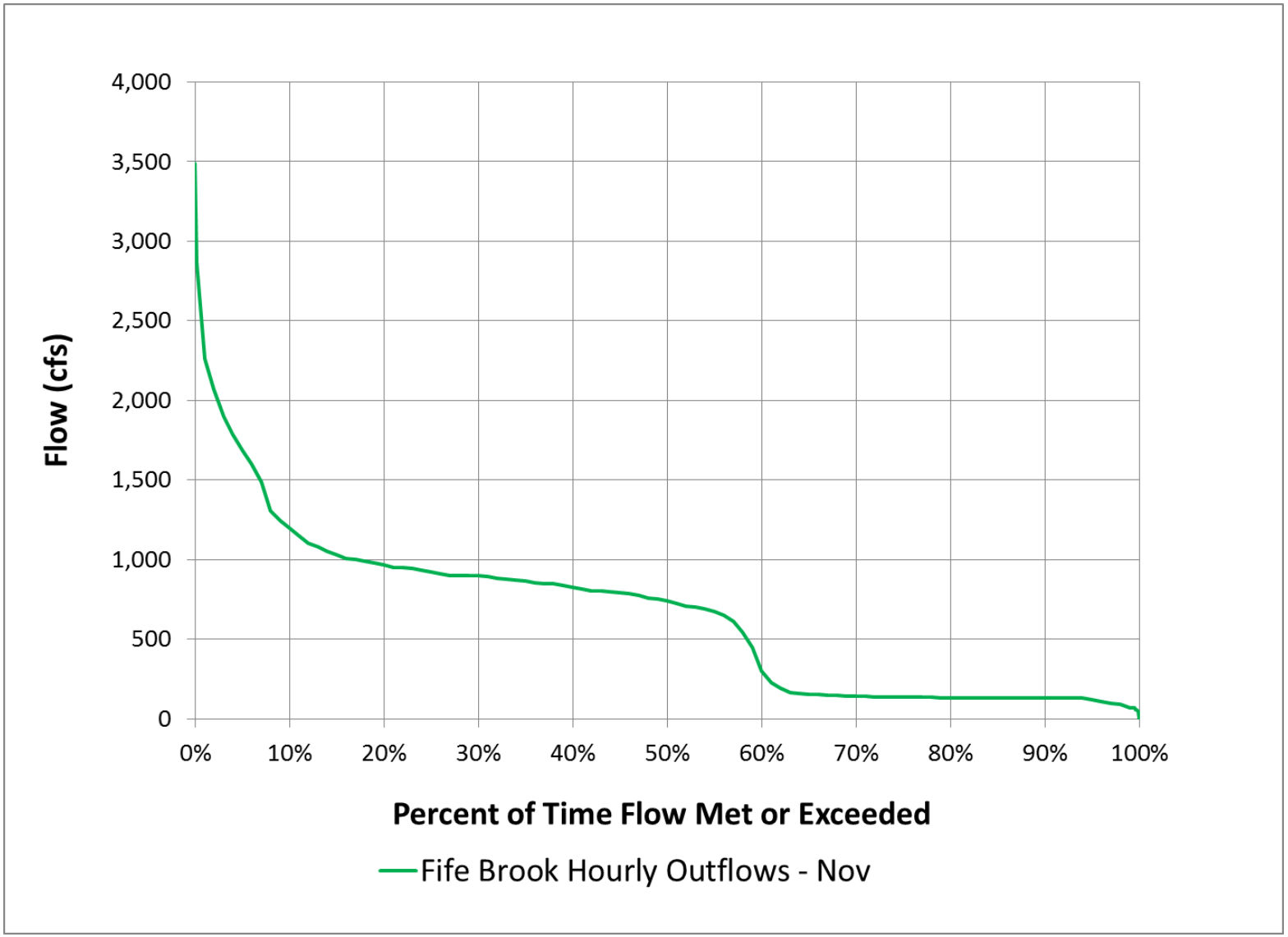












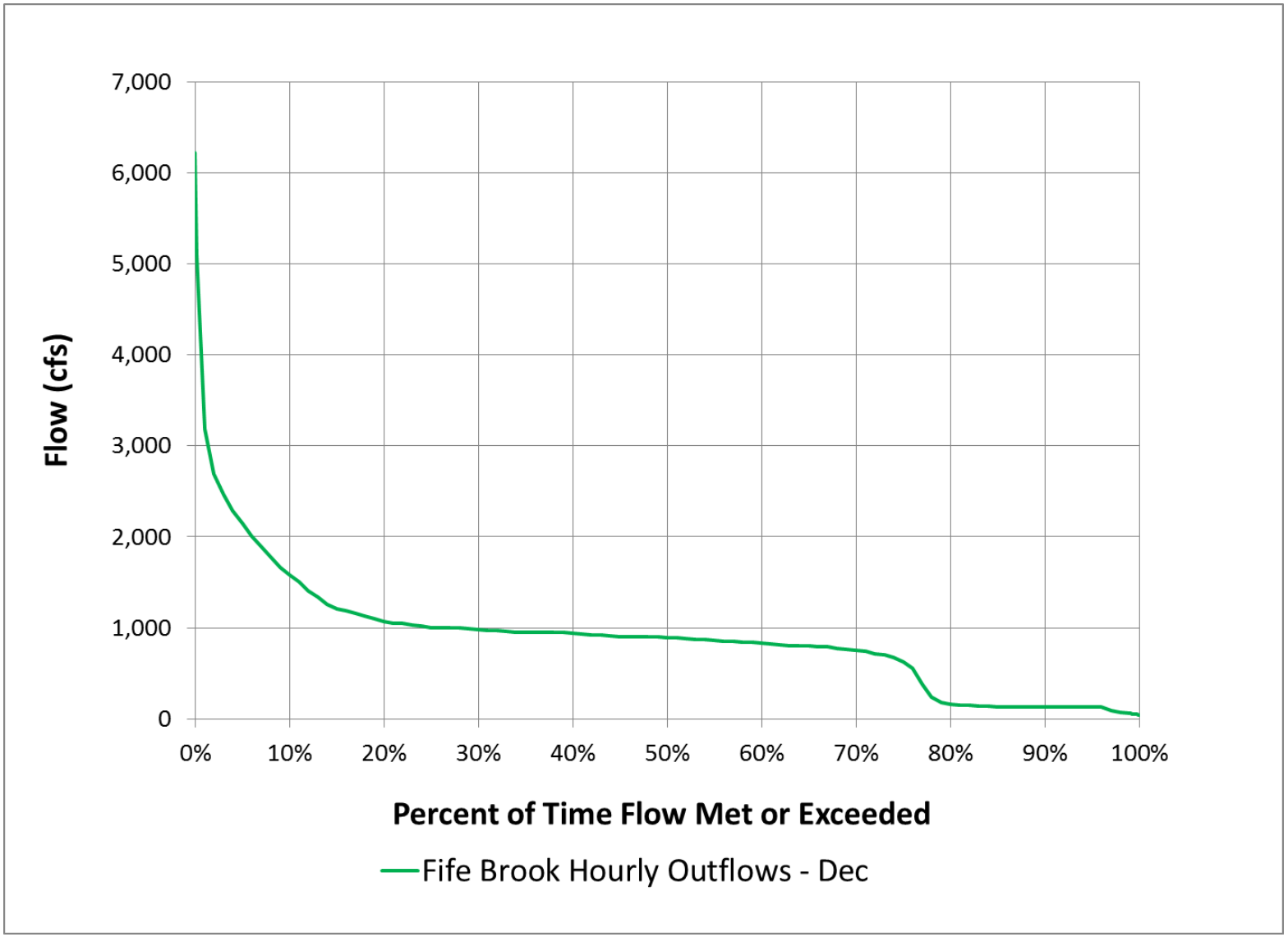


Exhibit C

Construction History

C.1 Introduction

On April 28, 1970, the FPC, predecessor to FERC, issued an original license for the Bear Swamp Project in accordance with the FPC's delegated authority under the Federal Power Act. Construction was initiated in 1970 and the Project was commissioned and placed into service in 1974. The Project includes the Bear Swamp PSD and the Fife Brook Development. Since acquisition in 2005[19], BSPC has engaged in a series of operations and maintenance (O&M) and life extension activities to maintain the reliability of the Project.

C.2 Project Schedule of New Development

BSPC has examined the potential for Project life extension, unit upgrade, and capacity addition (outside of, or beyond current authorizations), and has determined that life extension of the existing facilities is the only economical consideration for the Project at this time.[20] There is no fixed schedule for BSPC's life-extension program. This program consists of an ongoing program to maintain, repair, modify, or replace the civil, mechanical, or electrical components of the Project on an as-needed basis. BSPC reserves the right to reevaluate the potential for unit upgrades or capacity additions in the future.

The new environmental enhancements proposed by BSPC will be implemented consistent with the schedule presented in Table C.2-1.

[19] Order Approving Transfers of License, 110 FERC ¶ 62,245 (2005).

[20] As analyzed in, and authorized by the Commission's August 13, 2008 Order Amending License and Approving Revised Exhibit A, each unit's upgraded capacity, upon completion, will be 333 MW. The Commission's Order determined that the upgrade would "allow the licensee to enhance the efficiency of the project, while increasing the installed capacity by 66 MW" and that "this order does not constitute a major federal action significantly affecting the quality of the human environment".

TABLE C.2-1
SCHEDULE FOR IMPLEMENTATION OF ENVIRONMENTAL ENHANCEMENTS

Environmental Enhancement	Proposed Implementation (Months After New License Issuance)
Continue to provide 125 cubic feet-per-second (cfs) continuous minimum flow release from Fife Brook Dam.	Upon issuance
Provide 106 annual scheduled whitewater flow releases of 800 cfs between April and October, including 56 weekday releases and 50 weekend day releases.	Beginning in April following issuance of the new license
Develop an Operations Monitoring Plan and file for FERC approval.	12 months
Develop a Bat Management Plan and file for FERC approval.	12 months
Develop a State-Listed Rare Plants Management Plan and file for FERC approval.	18 months
Develop a Historic Properties Management Plan and file for FERC approval.	9 months
Develop a Recreation Facilities Management Plan and file for FERC approval.	12 months
Implement facility enhancements, i.e., overflow parking improvements at Fife Brook Fishing and Boating Access Area, provide additional seasonal restrooms at the Zoar Picnic Area, and provide portage trail from Showtime rapids, consistent with RFMP	18 months

Exhibit D

Statement of Costs and Financing

D.1 Original Cost of Existing Unlicensed Facilities

This section is not applicable to the Bear Swamp Project because the Licensee is not applying to the Commission for an initial (original) license.

D.2 Estimated Amount Payable Upon Takeover Pursuant to Section 14 of the Federal Power Act

Under Section 14(a) of the FPA, the Federal government may take over any project licensed by the Commission upon the expiration of the original license. The Commission may also issue a new license in accordance with Section 15(a) of the FPA. If such a takeover were to occur upon expiration of the current license, the Licensee would have to be reimbursed for the net investment, not to exceed fair value, of the property taken, plus severance damages. To date, no agency or interested party has recommended a federal takeover of the Project pursuant to Section 14 of the Federal Power Act.

D.2.1 Fair Value

The fair value of the Project depends on prevailing power values and license conditions, both of which are currently subject to change. The best approximation of fair value is likely to be the cost to construct and operate a comparable power generating facility. Because of the high capital costs involved with constructing new facilities and the increase in fuel costs associated with operating such new facilities (assuming a fossil-fueled replacement), the fair value would be considerably higher than the net investment amount. If a takeover were to be proposed, the Licensee would calculate fair value based on then-current conditions.

D.2.2 Net Investment

The FPA defines "net investment" as the original cost, plus additions, minus the sum of the following items (to the extent that such items have been accumulated during the period of the license from earnings in excess of a fair return on such investment): (a) unappropriated surplus;

(b) aggregate credit balances of current depreciated accounts; and (c) aggregate appropriations of surplus or income held in amortization, sinking fund, or similar reserves.

The net book investment for the Project is approximately [to be provided in the final application for new license] as of the end of 2017[21].

D.2.3 Severance Damages

Severance damages are determined either by the cost of replacing (retiring) equipment that is "dependent for its usefulness upon the continuance of the License" (Section 14, Federal Power Act), or the cost of obtaining an amount of power equivalent to that generated by the Project from the least expensive alternative source, plus the capital cost of constructing any facilities that would be needed to transmit the power to the grid, minus the cost savings that would be realized by not operating the Project. These values would need to be calculated based on power values and license conditions at the time of project takeover.

D.3 Estimated Cost of New Development

D.3.1 Land and Water Rights

The Licensee is proposing no expansion of its land or water rights as a consequence of this license application.

D.3.2 Cost of New Facilities

The Licensee is proposing no capacity-related developments at the Project. The Licensee proposes to install several new recreation facility improvements at the Project subsequent to the issuance of a new license. The cost to construct and maintain these facilities will be provided in *Exhibit E – Section E.8* of the final application for new license.

D.4 Estimated Average Annual Cost of the Project

This section describes the annual costs of the Project as proposed. The estimated average cost of the total Project is approximately [to be provided in the final application for new license] a year,

[21] BSPC's fiscal year is the calendar year; 2017 financial information will be considered a reasonable representation.

based on a full 2017 year period of record[22]. This estimate includes costs associated with existing and projected project operations and maintenance[23], as well as local property and real estate taxes, but excludes income taxes, depreciation, and costs of financing.

D.4.1 Capital Costs

The Licensee uses a [to be provided in the final application for new license] percent rate to approximate its average cost of capital. Actual capital costs are based on a combination of funding mechanisms that includes stock issues, debt issues, revolving credit lines, and cash from operations.

D.4.2 Taxes

Property taxes for the 2017 fiscal year were approximately [to be provided in the final application for new license]. Income taxes for the Project are incorporated into costs of the Licensee's consolidated business and are not separated out for the Project.

D.4.3 Depreciation and Amortization

The annualized composite rate of depreciation for the Project is approximately [to be provided in the final application for new license] percent.

D.4.4 Operation and Maintenance Expenses

The estimated annual operation and maintenance expense at the Project was approximately [to be provided in the final application for new license], including corporate support costs, but excludes property and real estate taxes.

D.5 Cost to Develop the License Application

The approximate cost through 2017 to prepare the application for new license for the Project was approximately [to be provided in the final application for new license].

[22] Full 2017 year period of record has been determined to be representative of the Annual Cost of the Project.
[23] Including major maintenance costs. Costs for individual protection, mitigation, and enhancement measures are provided in *Exhibit E, Section E.8* of the final license application.

D.6 Costs of Proposed Environmental Measures

The Licensee is proposing the following major environmental measures in this application:

- Continue to provide the 125 cubic feet-per-second (cfs) continuous minimum flow release from the Fife Brook Development for the protection of fish and aquatic resources.

- Continue to provide the 106 annual scheduled whitewater flow releases from the Fife Brook Development on 50 weekdays and 56 weekend days. BSPC proposes to increase the required flow releases from 700 cfs under the existing license to 800 cfs, and to maintain the existing release schedule.

- Develop and implement an Operations Monitoring Plan, including detail of the mechanisms and structures that will be used to provide continuous minimum flow releases and scheduled whitewater recreation releases, and including any periodic maintenance and calibrations necessary for any installed devices and any recording and reporting of data to FERC and /or resource agencies.

- Develop and implement a Bat Management Plan in consultation with U.S. Fish and Wildlife Service (USFWS) and Massachusetts Division of Fisheries and Wildlife (MADFW), to include measures to avoid or minimize adverse effects on the Federal- and State-listed northern long-eared Bat (*Myotis septentrionalis*) and the State-listed little brown bat (*Myotis lucifugus*) or associated critical habitat that may result from future Project-related construction or land-clearing activities at the Project during the term of the license.

- Develop and implement a State-Listed Rare Plants Management Plan in consultation with the MADFW, to include measures to avoid or minimize adverse effects on State-listed rare plants within the Project boundary that may result from future Project-related construction or land-clearing activities conducted during the term of the license.

- Develop and implement an Historic Properties Management Plan (HPMP) in consultation with the Massachusetts Historical Commission (MHC) and Federally recognized Indian tribes that describes how the Licensee will consider and manage historic properties within the Project's Area of Potential Effects (APE) during the term of the license.

- Develop and implement a Recreation Facilities Management Plan that describes how the Licensee will manage Project recreation facilities within the Project boundary during the term of the license, including measures to address overflow parking and/or enhance the existing overflow parking area at the Fife Brook Fishing and Boating Access Area, the design and construction of a new portage trail that begins downstream from the Showtime whitewater feature and extends upstream to the existing vehicle turnaround at the Dunbar Brook Picnic Area, and the provision of additional seasonal restroom facilities at the Zoar Picnic Area.

The cost to develop and implement these measures is provided in *Exhibit E – Section E.8*.

D.7 Estimated Annual Value of Project Power

The Licensee sells all of the electricity generated at the Project into ISO New England, with approximately 100 MW of capacity committed to a utility under a power purchase agreement until April, 2021. The average annual gross energy projection for the Project, and an approximation of the value of project power, will be provided in the final application for new license.

D.8 Sources and extent of Financing

The Licensee's current financing needs are generated from internal funds. The Licensee is likely to finance major enhancements through earnings retention, equity contributions, third-party loans and loans made by the corporate parent or some combination of those mechanisms.

Exhibit F

General Design Drawings

F.1 List of General Design Drawings

The General Design Drawings show overall plan views, elevation and sections of the principal Project works in sufficient detail to provide a full understanding of the Project. In accordance with 18 C.F.R. Part 388, BSPC is requesting that the General Design Drawings for the Bear Swamp Project be given privileged treatment because the drawings contain Critical Energy Infrastructure Information. This request for privileged treatment is being made to the Commission in accordance with the Final Rule (Order No. 630-A) issued by the Commission on July 23, 2003 (revised August 8, 2003). Therefore, in conjunction with filing this License Application, the Exhibit F General Design Drawings listed below are being filed with the Commission in Volume IV of this application under separate cover in accordance with Order 630-A.

TABLE F.1-1
BEAR SWAMP PROJECT GENERAL DESIGN DRAWINGS

Drawing Number	Title
Sheet F-1	Bear Swamp Project – Site Plan
Sheet F-2	Upper Reservoir Dikes, Plans & Section
Sheet F-3	Fife Brook Spillway, Embankment, & Intake
Sheet F-4	Bear Swamp Powerhouse Floorplan
Sheet F-5	Bear Swamp Cross Section Intake & Powerhouse
Sheet F-6	Bear Swamp Tailrace Outlet Plan & Sections

F.2 Supporting Design Report

18 CFR §4.41(g)(3) requires that an applicant for a new license file with the Commission two copies of a Supporting Design Report (SDR) when the applicant files a license application. An SDR summarizes the studies that have been performed to date and the assumptions that have been made related to the development of the existing Project. The information contained within

the SDR demonstrates that the existing structures are safe and adequate to fulfill their stated functions.

The Project falls under the requirements of the Part 12 – Safety of Water Power Projects and Project Works, Subpart D – Inspection by an Independent Consultant. In 2003, FERC instituted a new program to be used in the context of the Part 12 Independent Consultant Safety Inspection Program entitled "Potential Failure Modes Analysis" (PFMA), which is a dam-and project-safety tool intended to broaden the scope of the safety evaluations to include potential failure scenarios that may have been overlooked in past investigations. In conjunction with these endeavors, FERC also initiated a requirement for development of a Supporting Technical Information (STI) document for sites subject to Part 12D.

The purpose of the STI document is to summarize those Project elements and details that do not change significantly between 5-year FERC Part 12 independent consultant safety inspections. The STI document includes sufficient information to understand the design and current engineering analyses for the Project such as:

- A complete copy of the PFMA report,
- A detailed description of the project and project works,
- A summary of the construction history of the project,
- Summaries of Standard Operating Procedures,
- A description of geologic conditions affecting the project works,
- A summary of hydrologic and hydraulic information,
- Summaries of instrumentation and surveillance for the project and collected data,
- Summaries of stability and stress analyses for the project works, and
- Pertinent correspondence from the FERC and state dam safety organizations related to dam safety.

Since the Project has been inspected by an independent consultant within the past five years and an STI document has been prepared and submitted to the Commission, further discussions regarding geological and subsurface investigations, hydrologic and hydraulic analyses, stability analyses for all major structures, etc. will not be reiterated as part of the SDR.

For reference purposes, the Licensee denotes below the filing dates with the Commission's New York Regional Office of the most recent Part 12 Safety Inspection Report, the PFMA Report which is included within the STI, and the STI document:

Document	Commission Filing Date
8th Part 12 Safety Inspection Report	September 30, 2015
PFMA Report	September 30, 2015
STI Document	September 30, 2015 (Revision 7)

The Licensee is not proposing as part of this relicensing any new facilities or operational modifications intended to increase Project capacity.

Exhibit G

Project Maps

G.1 Project Maps

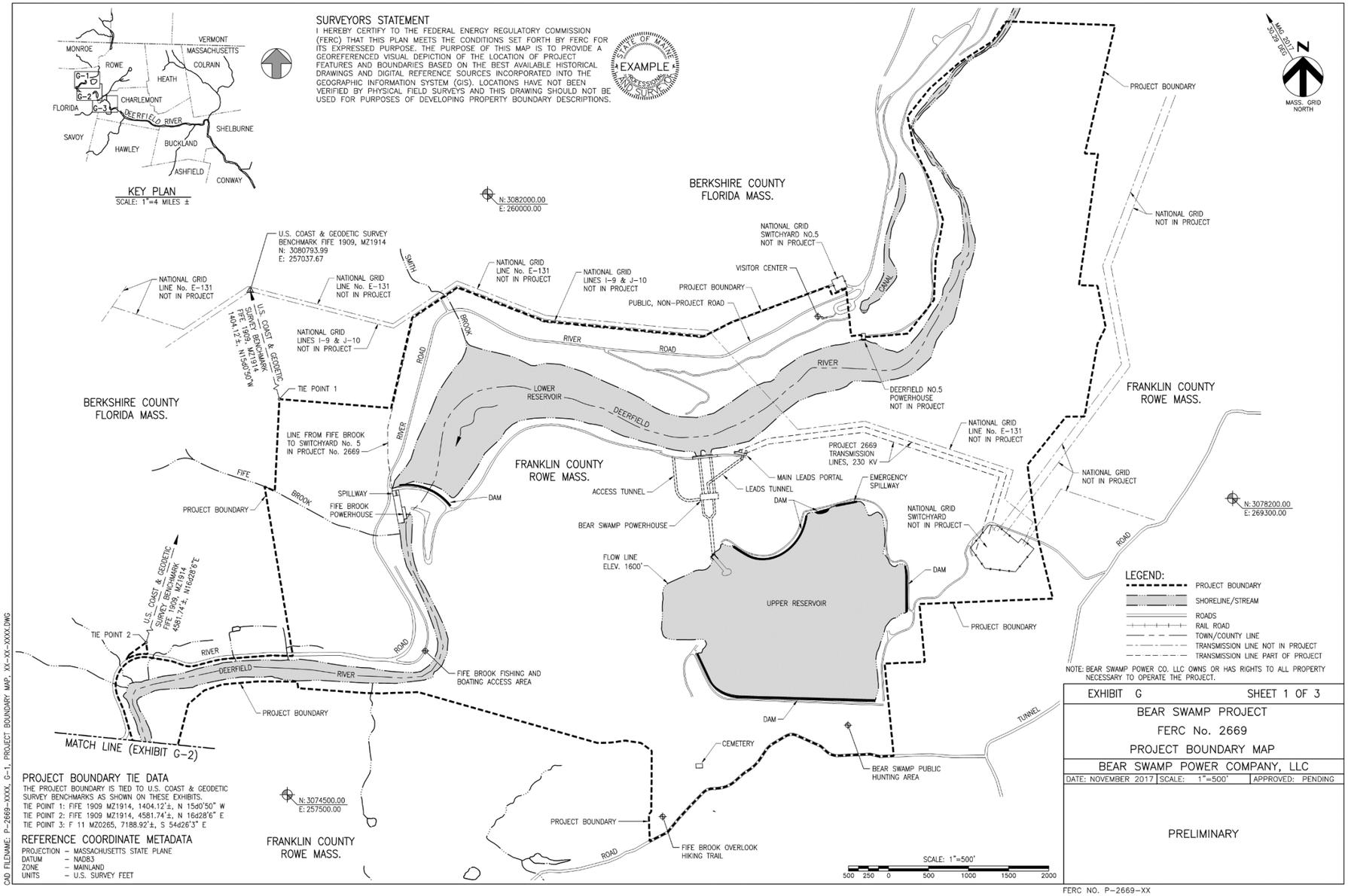
The Exhibit G maps, prepared in accordance with the requirements of 18 C.F.R. §§ 4.39 and 4.51(h), are attached hereto and incorporated herein. Minor corrections to the Bear Swamp Project boundary occurred during the development of these maps to correct conflicts found between the Exhibit G drawings previously approved by FERC and the associated boundary description. BSPC possesses property or easement rights to all areas within the defined Project boundary.

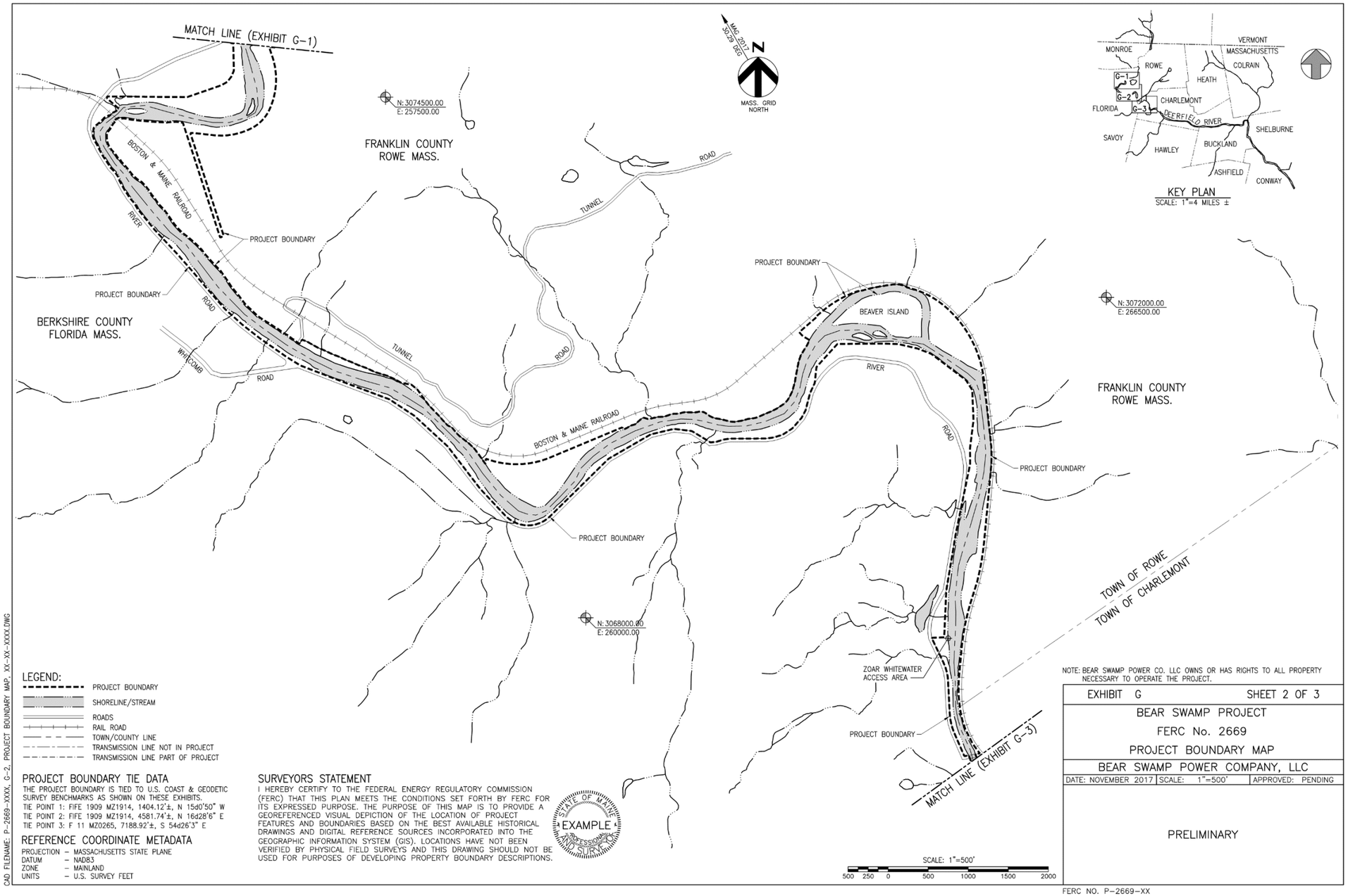
The Project Boundary Maps show the Project vicinity, location, and boundary in sufficient detail to provide a full understanding of the Project.

TABLE G.1-1
PROJECT BOUNDARY MAPS

Drawing Number	Title
Exhibit G - Sheet 1 of 3	Project Boundary Map
Exhibit G - Sheet 2 of 3	Project Boundary Map
Exhibit G - Sheet 3 of 3	Project Boundary Map

FIGURE G.1-1
PROJECT BOUNDARY MAPS





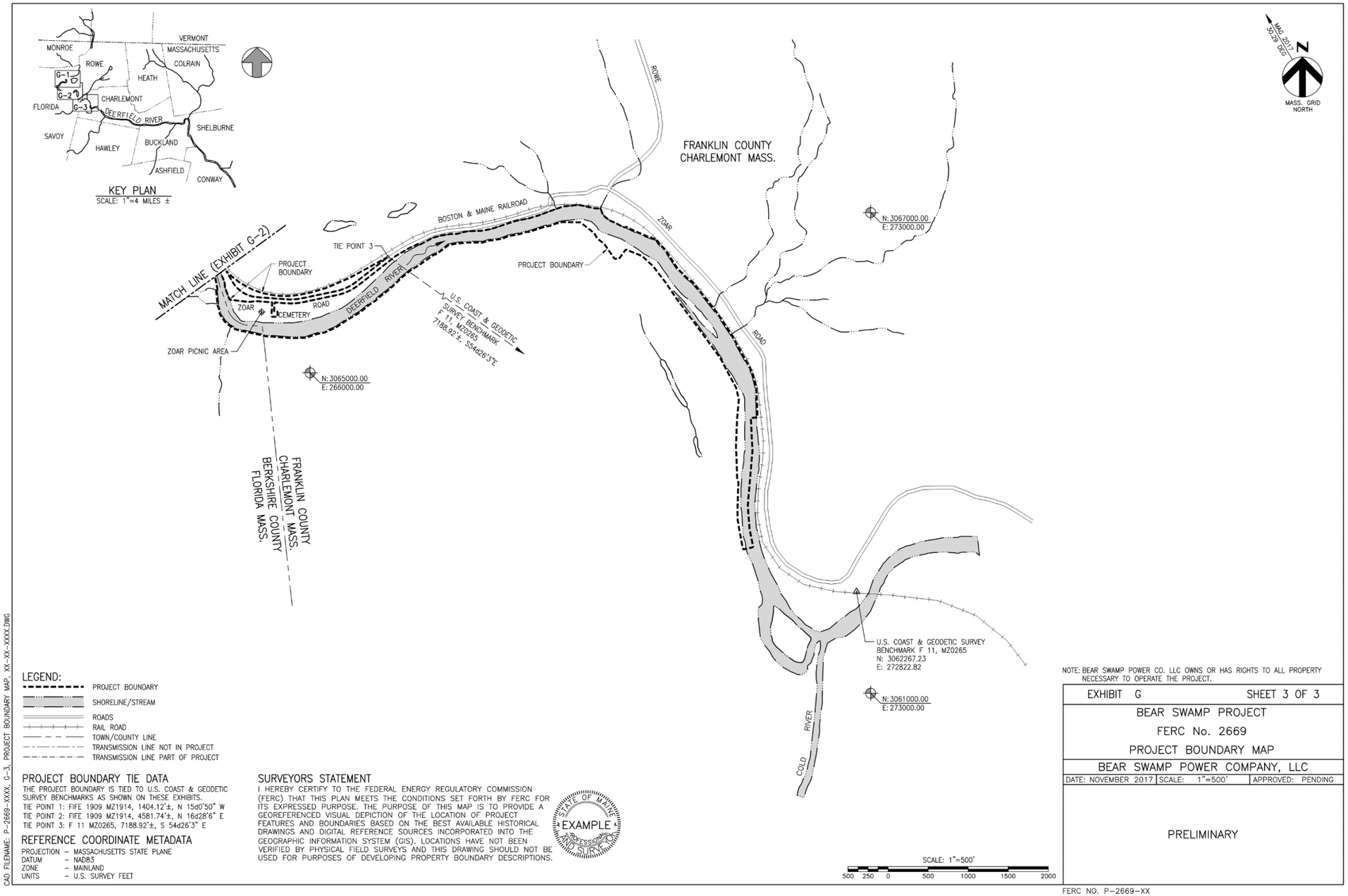


Exhibit H

Description of Project Management and Need for Project Power

H.1 Introduction

Portions of this Exhibit are under development and will be refined in the final license application.

The Bear Swamp Project is an existing hydroelectric project owned by, and licensed to, BSPC. The Licensee is an independent power producer and, as such, does not provide electric service to any particular group or class of customers. The Project generates renewable power that is currently sold into the market administered by the non-profit ISO New England (with approximately 100 MW of capacity committed to a utility under a power purchase agreement until April, 2021). ISO New England administers all significant aspects of the New England Power Pool (NEPOOL) power market including: (i) the NEPOOL Open Access Transmission Tariff; (ii) the dispatch, billing and settlement system for interchange power in NEPOOL; (iii) NEPOOL energy and automatic generation control markets; and (iv) the NEPOOL installed capability market.

H.2 Information to be Supplied by All Applicants

H.2.1 Plans and Ability of the Applicant to Operate and Maintain the Project

H.2.1.1 Plans to Increase Capacity or Generation

Pursuant to the August 13, 2008 Order Amending License and Approving Revised Exhibit A, BSPC has been authorized by the Commission to upgrade Unit 1 and Unit 2 at the Bear Swamp PSD. Each unit's upgraded capacity, upon completion (expected by 2022), will be 333 MW with maximum generation and pump flows of 6,200 cfs and 5,120 cfs respectively. The Commission's Order determined that the upgrade would "allow the licensee to enhance the efficiency of the project, while increasing the installed capacity by 66 MW". The Licensee currently has no further plans to increase the capacity or generation of the Project.

H.2.1.2 Plans to Coordinate the Operation of the Project with Other Water Resource Projects

The Project is located on the Deerfield River in northwest Massachusetts. The Project consists of the 600 MW Bear Swamp PSD and the 10 MW Fife Brook Development, a conventional hydroelectric facility. The Bear Swamp PSD is operated as a pumped storage facility generally producing electricity during daylight hours, with water from the Lower Reservoir (Fife Brook impoundment) pumped to the Upper Reservoir overnight. The FBD is generally operated as a run-of-release system, in response to regulated, peaking inflows from the upstream hydroelectric projects which are owned and operated by a separate FERC licensee. There are a total of 11 hydroelectric developments on the Deerfield River, comprising three separate projects licensed by the Commission (Table H.2-1; Figure H.2-1). These Projects consist of:

- **Deerfield River Project (FERC No. 2323)** –GRH owns and operates the DRP located in Bennington and Windham counties in Vermont, and in Berkshire and Franklin counties in Massachusetts. The DRP consists of one seasonal storage development and seven peaking developments: the Somerset, Searsburg, and Harriman developments in Vermont, and the Sherman, Station No. 5, Station No. 4, Station No. 3, and Station No.2 developments in Massachusetts.
- **Bear Swamp Project (FERC No. 2669)** – BSPC owns and operates the Bear Swamp Project with the Fife Brook Development located in between GRH's Station No. 5 and Station No. 4. The Station No. 5 outflows constitute the inflows to the BSP's Lower Reservoir which subsequently comprise the entirety of the available operating flows for the FBD.
- **Gardners Falls Project (FERC No. 2334)** – Nautilus owns and operates the single-development Gardner Falls Project located downstream from GRH's Station No. 3 Development.

TABLE H.2-1
HYDROELECTRIC DEVELOPMENTS ON THE DEERFIELD RIVER

Development	Licensee	State	River Mile*	Capacity (MW)	Mode of Operation
Somerset	GRH	VT	66.0	0	Seasonal storage
Searsburg	GRH	VT	60.3	4.2	Peaking, daily storage
Harriman	GRH	VT	48.5	33.6	Peaking, seasonal storage
Sherman	GRH	VT/MA	42.0	7.2	Peaking, weekly storage
Deerfield No. 5	GRH	MA	41.2	17.6	Peaking, daily storage
Bear Swamp PSD	BSPC	MA	39.0	600	Pumped storage, independent of Deerfield River flows
Fife Brook	BSPC	MA	37.0	10	Run-of-release in response to Deerfield No. 5 operation
Deerfield No. 4	GRH	MA	20.0	4.8	Peaking, daily storage
Deerfield No. 3	GRH	MA	17.0	4.8	Peaking, daily storage
Gardners Falls	Nautilus	MA	15.7	3.6	Peaking, daily storage
Deerfield No. 2	GRH	MA	13.2	4.8	Peaking, daily storage

*River miles are as reported in FERC's 1996 Final Environmental Impact Statement for the Deerfield River Project (FERC 1996). To the extent practicable, river miles as referenced in this DLA are based on the FERC 1996 Final Environmental Impact Statement. However, outside resources referenced in this DLA may utilize alternate river mile nomenclature.

The overall flow regime of the Deerfield River can be generally characterized as having regular flow and stage fluctuations driven by the authorized peaking operations of the DRP. Constructed between 1911 and 1927, and spanning more than 50 miles of the Deerfield River in Vermont and Massachusetts, the eight developments of the DRP have provided for managed flows along the Deerfield River for nearly a century. The current peaking flow regime for the river was established by:

- The Deerfield River Project Relicensing Offer of Settlement filed with the Commission by letter dated October 5, 1994 (Settlement);
- The Water Quality Certification (WQC) issued for the DRP by the Massachusetts Department of Environmental Protection (DEP) pursuant to Section 401 of the federal Clean Water Act24; and
- FERC's 1997 Order Approving Offer of Settlement and Issuing New License for the DRP25.

[24] 33 United States Code (U.S.C.) § 1341.
[25] 79 FERC ¶ 61,006, Order Approving Offer of Settlement and Issuing New License (1997).

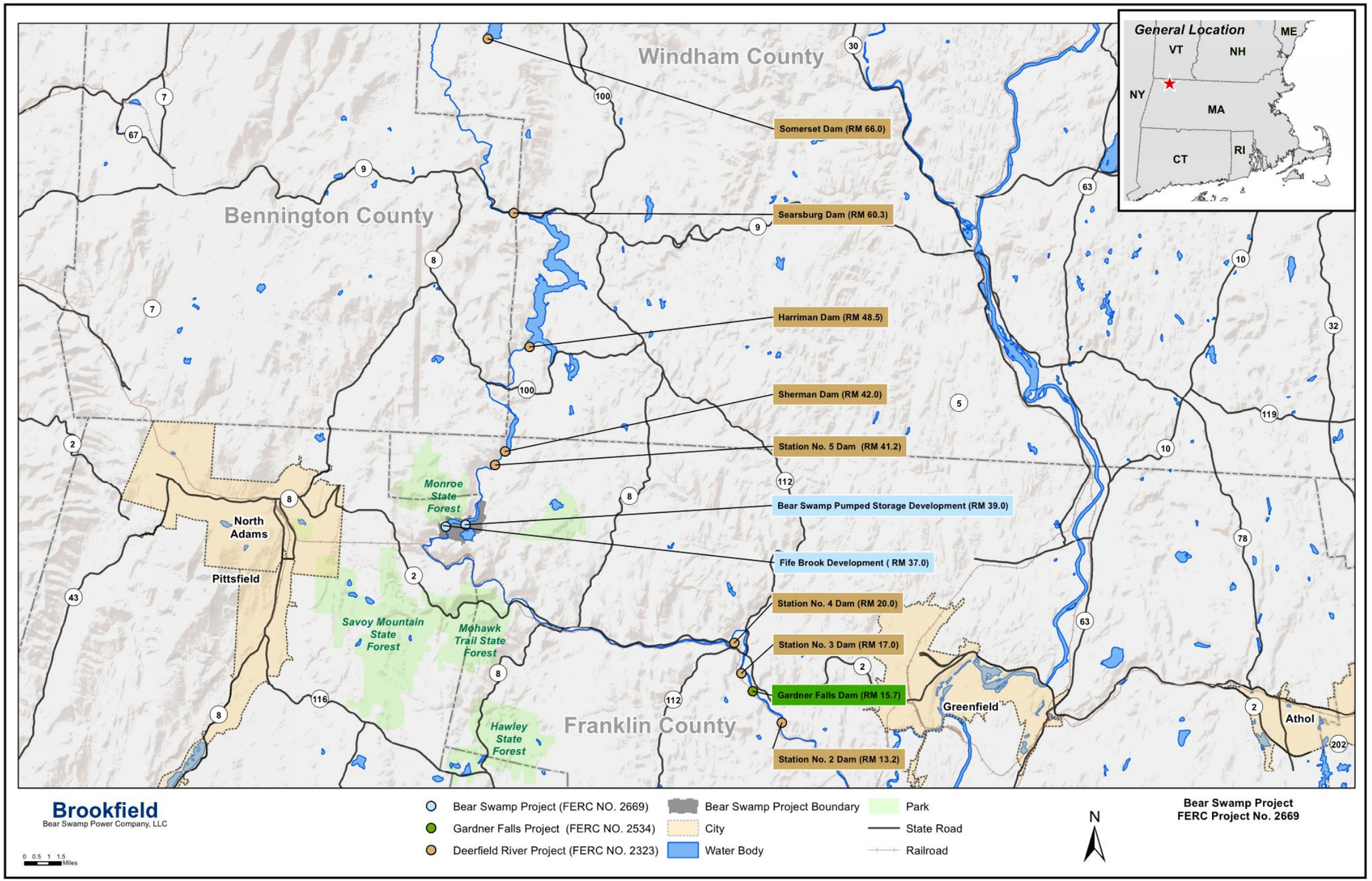
Todays' operation of the BSP is authorized by the original April 28, 1970, FERC license, as amended. The Commission's April 4, 1997, Order Amending the Project's license (1997 Amendment) incorporated applicable provisions of the Settlement; namely the provision of a continuous minimum flow of 125 cfs from the FBD from reservoir storage if necessary (Article 401), and 106 scheduled recreational releases (Article 404).

The Settlement provides a significant and diverse array of benefits, both developmental and non-developmental, to the resources along the Deerfield River. The term of the Settlement runs concurrent with the term of DRP license which expires March 31, 2037. The Settlement provides for the continuation of the peaking regime of the DRP both upstream and downstream of the BSP.

The Bear Swamp Project's Fife Brook Development is located in the middle of the DRP peaking system. The pass-through of the DRP peaking flow regime by the FBD serves the purposes of supporting the requisite 106 scheduled whitewater releases downstream of the FBD, provision of the continuous minimum flow of 125 cfs from the FBD from the Lower Reservoir storage if necessary, as well as to provide the flows necessary to allow downstream facilities to comply with the terms and conditions of their licenses.

The DRP, Bear Swamp Project, and Gardners Falls Project all provide clean, renewable energy to the electric system, displacing the operation of fossil-fueled power plants and thus reducing air pollution, greenhouse gases, and the use of imported fuels.

FIGURE H.2-1
HYDROELECTRIC DEVELOPMENTS ALONG THE DEERFIELD RIVER



H.2.1.3 Plans to Coordinate the Operation of the Project with Other Electrical Systems

BSPC is an independent power producer and member of NEPOOL. NEPOOL is a voluntary association whose members include not only traditional vertically integrated electric utilities, but independent power producers such as BSPC that are participating in the electricity marketplace. ISO New England serves as the independent system operator to operate the regional bulk power system and to administer the wholesale marketplace. ISO New England's primary responsibilities are to coordinate, monitor, and direct the operations of the major generating and transmission facilities in the region. The objective of ISO New England is to promote a competitive wholesale electricity marketplace while maintaining the electrical system's integrity and reliability. ISO New England seeks to assure both maximum reliability and economy of the bulk power supply for New England.

To this end, the electric facilities of NEPOOL member companies are operated as if they comprised a single power system. ISO New England accomplishes this by central dispatching of available power resources, and using the lowest cost generation and transmission equipment available at any given time consistent with meeting reliability requirements. As a result of this economic dispatch, utilities and their customers realize significant savings annually. NEPOOL participants also have strengthened the reliability of the bulk power system through shared operating reserves and coordinated maintenance scheduling.

The ISO New England staff constantly monitors and directs the operation of more than 300 generators and more than 7,600 miles of transmission lines in New England. ISO New England also is responsible for forecasting the various levels of daily electricity demand that will occur throughout the region and scheduling resources to meet the demand.

H.2.2 Need for the Electricity Generated by the Project

H.2.2.1 The Reasonable Costs and Availability of Alternative Sources of Power

The Project generates renewable power. The Licensee sells all of the electricity generated at the Project into ISO New England, with approximately 100 MW of capacity committed to a utility under a power purchase agreement until April, 2021.

The replacement of energy and capacity provided by the Project would be met through other sources, likely to be fossil-fired generating units, whose fuel and other variable costs would be significantly higher than those of the Project. As the lowest variable cost resource among power supply alternatives, hydroelectric assets such as the Project can bid energy into the ISO New England market at lower prices than alternative resources. Thus, loss of a low-variable cost resource such as the Project would result in upward pressure on the clearing prices in the NEPOOL market and ultimately paid by electric consumers in New England.

The Project provides renewable power, without the emissions of air pollutants or greenhouse gases that the marginal fossil fuel plants produce. This is an increasingly important fact in New England where all six New England states have enacted legislation to reduce the dependence on fossil fired generation through the introduction of Renewable Portfolio Standards (RPS), or similar legislation, that encourages and requires the use of renewable power sources in the state's total resource output. Many of these RPS programs include an annual escalating supply requirement to further encourage reliance on renewable power sources. Legislation that has been enacted is designed to increase the amount of renewable power supply in the region's mix of generation resources or, alternatively, reduce the amount of fossil fired generation as a percentage of the total resource output.

As these statutes and rules are implemented or adopted in New England, clean hydroelectric generation becomes an even more important and valuable part of the fuel mix for electric suppliers in the region.

With respect to pumped-storage hydropower (PSH) grid power is needed for pumping, but as with other storage technologies, PSH uses electricity from the grid to store energy (energy that would otherwise still be generated, for example, by night-time wind). PSH further aligns with renewable energy in that its fuel source for generation (water) is renewable and PSH generation does not involve fossil fuels and thermal energy conversion processes.

PSH facilitates the penetration of other renewables such as wind and solar into the market, and it allows fossil-fired generation to operate more efficiently and with fewer emissions. This is borne out by the U.S. Department of Energy's 2016 Hydropower Vision Report (DOE Vision Report) which states: "*PSH plants also provide a number of other benefits to power systems. For example, PSH plants provide a flatter net load for thermal generating units, allowing the units to reduce cycling and operate for longer periods of time at more efficient set points, especially in small systems. PSH plants can also provide the load and energy storage for excess variable generation (VG), thus reducing the curtailment of this generation. This supports integration of a larger share of variable renewables into the power grid*…" [Chapter 2, pp. 135]. The DOE Vision Report further states: "*In addition, PSH operation provides indirect emission benefits by allowing system operators to run fossil- fired plants more efficiently, with less ramping and unit cycling (start/stop operation)*" [Chapter 2, pp. 227].

The operational flexibility of PSH facilities such as the Bear Swamp Project also supports a wide array of other key grid services such as;

- Inertial response
- Frequency regulation
- Contingency reserves
- Power system stability
- Voltage support
- Load leveling
- Generating capacity
- Integration of variable renewables
- Reduced cycling and ramping of thermal generating units
- Power quality and reliability.

H.2.2.2 Increase in Costs if the License is not Granted a License

If the Licensee is not granted a license, this Project would cease to provide affordable and clean electricity to the New England Power Pool from its generation; it would also cease to provide approximately 600 MW of reliable capacity to the region. An un-quantified increase in costs would likely occur to the New England electric consumer if a license for continued operation of the Project was not granted.

H.2.2.3 Effects of Alternative Sources of Power

H.2.2.3.1 Effects on Licensee's Customers

This section is not applicable to the Licensee, since the Licensee sells its electricity into ISO-NE.

H.2.2.3.2 Effect on Licensee's Operating and Load Characteristics

The Licensee is an independent power producer and, as such, does not maintain a separate transmission system which could be affected by replacement or alternative power sources.

H.2.2.3.3 Effect on Communities Served by the Project

See the discussion above in Section H.2.2.1 (The Reasonable Costs and Availability of Alternative Sources of Power), and Section H.2.2.2 (Increase in Costs if the Applicant is not Granted a License), regarding the loss of the Project's generation. Because the Licensee cannot predict with any certainty the actual type or location of a potential alternative facility providing replacement power, BSPC cannot specifically discuss potential effects on any particular community.

The Bear Swamp Project helps to provide low cost, reliable capacity and energy for the regional electric customers. If ISO New England must replace the power benefits generated at the Project, the cost would be significantly more than the projected cost of operating the Project under the new license.

H.2.3 Need, Reasonable Cost, and Availability of Alternative Sources of Power

The Licensee is an independent power producer and, as such, does not have an obligation or need to prepare load and capability forecasts in reference to any particular group or class of customers. For the region, those obligations and tasks remain within the scope of services provided by ISO New England and NEPOOL.

H.2.4 Effect of Power on Licensee's Industrial Facility

This section is not applicable to BSPC which does not own industrial facilities.

H.2.5 Need of Indian Tribe Licensee for Electricity Generated by the Project

This section is not applicable to the Licensee.

H.2.6 Impacts on the Operations and Planning of Licensee's Transmission System

Because the Licensee is an independent power producer and does not own the local transmission system, this section is not applicable to the Licensee.

H.2.7 Statement of Need for Modifications

The Licensee is not proposing any additional fundamental capacity changes to the Project facilities or operation. Relicensing and continued operation of the Project will continue to be compatible with the comprehensive development and utilization of the waterway, and conform to the various comprehensive natural resource plans developed by resource management agencies, as discussed below.

H.2.8 Consistency with Comprehensive Plans

BSPC has reviewed federal and Commonwealth of Massachusetts comprehensive plans adopted by the FERC under section 10(a)(2)(A) of the Federal Power Act (FPA), 16 U.S.C. section 803(a)(2)(A). On April 27, 1988, the FERC issued Order No. 481-A, revising Order No. 481, issued on October 26, 1987, establishing that the Commission will accord FPA section 10(a)(2)(A) comprehensive plan status to any federal or state plan that:

> *Is a comprehensive study of one or more of the beneficial uses of a waterway or waterways; Specifies the standards, data, and methodology used; and is filed with the Secretary of the Commission.*

FERC currently lists 27 federal comprehensive plans for the Commonwealth of Massachusetts. Of these, 13 are potentially relevant to the Project. Resource management agencies of the Commonwealth of Massachusetts and the Franklin Regional Council of Governments (FRCOG) have a total of 9 additional comprehensive plans that may be relevant to the management of the waterway or waterways. Accordingly review is comprised of the 13 FERC-listed plans and the 9 additional plans (22 plans).

The Licensee has reviewed these plans (summary of each below), and to extent the plan is applicable, has determined the Project is consistent with such plans.

H.2.8.1 Federal Comprehensive Plans

Unless otherwise noted, these plans have not been updated or updates have not been submitted to FERC for approval since their development dates noted below.

Atlantic States Marine Fisheries Commission. 1998. Amendment 1 to the Interstate Fishery Management Plan for Atlantic sturgeon (Acipenser oxyrhynchus oxyrhynchus). (Report No. 31). July 1998.

The Atlantic States Marine Fisheries Commission (ASMFC) 1990 Fishery Management Plan (FMP) for Atlantic Sturgeon was implemented to better manage the species throughout its U.S. range. Despite implementation of the FMP, some Atlantic sturgeon spawning stocks continued to

deteriorate. In 1996, the ASMFC decided to amend the plan with the goal of restoring Atlantic sturgeon spawning stocks to population levels which will provide for sustainable fisheries and ensure viable spawning populations. The objectives of the Amendment are to establish 20 protected year classes of females in each spawning stock; close the fishery for a sufficient time period to reestablish spawning stocks and increase numbers in current spawning stocks; reduce or eliminate bycatch mortality of Atlantic sturgeon; determine the spawning sites and provide protection of spawning habitats for each spawning stock; where feasible, reestablish access to historical spawning habitats for Atlantic sturgeon; and conduct appropriate research as needed, especially to define unit stocks of Atlantic sturgeon. The Project is not located on a river managed for Atlantic Sturgeon, and this plan is, therefore, not applicable to the Project.

Atlantic States Marine Fisheries Commission. 1998. Interstate fishery management plan for Atlantic striped bass. (Report No. 34). January 1998.

The ASMFC 1998 Interstate fishery management plan for Atlantic striped bass presents striped bass management history, fishery data, and catch and weight at age for commercial and recreational landings. A virtual population analysis is presented by a variety of resource agencies. The 1998 report concludes that the Atlantic coastal stocks of striped bass are at a high level of abundance and are being exploited at a sustainable level. Atlantic States Marine Fisheries Commission estimates that spawning stock biomass should continue to increase over the short term under current levels of management. The Project is not located on a river managed for striped bass, and this plan is, therefore, not applicable to the Project.

Atlantic States Marine Fisheries Commission. 1999. Amendment 1 to the Interstate Fishery Management Plan for shad and river herring. (Report No. 35). April 1999.

The stated goal of the ASMFC 1999 Amendment 1 to the Interstate Fishery Management Plan for shad and river herring was to protect, enhance, and restore East Coast migratory spawning stocks of American shad, hickory shad, and river herrings in order to achieve stock restoration and maintain sustainable levels of spawning stock biomass. Objectives identified in the plan were to prevent overfishing of American shad stocks by constraining fishing mortality; develop definitions of stock restoration; determine appropriate target mortality rates and specify rebuilding schedules for American shad populations within the management unit; maintain existing or more conservative regulations for hickory shad and river herring fisheries until new

stock assessments suggest changes are necessary; and promote improvements in degraded or historic alosine habitat throughout the species range. The Project is not located on a river managed for shad or river herring, and this plan is, therefore, not applicable to the Project.

Atlantic States Marine Fisheries Commission. 2000. Technical Addendum 1 to Amendment 1 of the Interstate Fishery Management Plan for shad and river herring. February 9, 2000.

The ASMFC 2000 Technical Addendum 1 to Amendment 1 of the Interstate Fishery Management Plan for shad and river herring addresses clarifications and corrections in Amendment 1. Many of the clarifications and corrections are minor. Amendment 1 was written to "protect, enhance, and restore East Coast migratory spawning stocks of American shad, hickory shad, and river herrings in order to achieve stock restoration and maintain sustainable levels of spawning stock biomass." The Project is not located on a river managed for shad or river herring, and this plan is, therefore, not applicable to the Project.

Atlantic States Marine Fisheries Commission. 2009. Amendment 2 to the Interstate Fishery Management Plan for shad and river herring, Arlington, Virginia. May 2009.

The stated goal of the ASMFC 2009 Amendment 2 to the Interstate Fishery Management Plan for shad and river herring is to protect, enhance, and restore East Coast migratory spawning stocks of American shad, hickory shad, alewife, and blueback herring in order to achieve stock restoration and maintain sustainable levels of spawning stock biomass. The management unit under this plan includes all migratory American shad, hickory shad, alewife, and blueback herring stocks of the East Coast. This Amendment prohibited commercial and recreational river herring fisheries in state waters beginning January 1, 2012, unless a state or jurisdiction has a sustainable management plan reviewed by the Technical Committee and approved by the Management Board. The Amendment defines a sustainable fishery as "a commercial and/or recreational fishery that will not diminish the potential future stock reproduction and recruitment." Amendment 2 required states to implement fisheries-dependent and independent monitoring programs. The Project is not located on a river managed for shad or river herring, and this plan is, therefore, not applicable to the Project.

Atlantic States Marine Fisheries Commission. 2010. Amendment 3 to the Interstate Fishery Management Plan for shad and river herring, Arlington, Virginia. February 2010.

The ASMFC 2010 Amendment 3 to the Interstate Fishery Management Plan for shad and river herring was developed to address only measures for American shad, whereas Amendment 2 addressed measures for alewife and blueback herring (collectively river herring). The goal of the Amendment is to protect, enhance, and restore Atlantic coast migratory stocks and critical habitat of American shad in order to achieve levels of spawning stock biomass that are sustainable, can produce a harvestable surplus, and are robust enough to withstand unforeseen threats. This Amendment requires similar management and monitoring as developed in Amendment 2. Specifically, Amendment 3 prohibits shad commercial and recreational fisheries in state waters beginning January 1, 2013, unless a state or jurisdiction has a sustainable management plan reviewed by the Technical Committee and approved by the Management Board. The Project is not located on a river managed for shad or river herring, and this plan is, therefore, not applicable to the Project.

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

The ASMFC 2000 Interstate Fishery Management Plan for American eel plan is applicable because the Bear Swamp Project is located on the Deerfield River, which supports a population of American eel. This plan provides relevant guidance for the management and harvest of American eel in Massachusetts and includes information regarding American eel status in the state. This plan is a comprehensive study of one or more of the beneficial uses of a waterway, waterways, and/or water body and is filed with the Secretary of the Commission.

National Marine Fisheries Service. 1998. Final Amendment #11 to the Northeast Multi-species Fishery Management Plan; Amendment #9 to the Atlantic sea scallop Fishery Management Plan; Amendment #1 to the monkfish Fishery Management Plan; Amendment #1 to the Atlantic salmon Fishery Management Plan; and Components of the proposed Atlantic herring Fishery Management Plan for Essential Fish Habitat. Volume 1. October 7, 1998.

The purpose of the NMFS 1998 Amendments is to identify and describe the Essential Fish Habitat (EFH) for Atlantic herring, sea scallops, Atlantic salmon, and fifteen species of groundfish to better protect, conserve, and enhance this habitat. It also identifies the major threats to EFH from both fishing and non-fishing related activities and identify conservation and

enhancement measures. The document identifies various management objectives in support of associated habitat policy. The Project is not located on a river managed for the Atlantic sea scallop, monkfish, or Atlantic salmon, and this plan is, therefore, not applicable to the Project.

National Marine Fisheries Service. 1998. Final Recovery Plan for the shortnose sturgeon (*Acipenser brevirostrum*). Prepared by the Shortnose Sturgeon Recovery Team for the National Marine Fisheries Service, Silver Spring, Maryland. December 1998.

The National Marine Fisheries Service (NMFS) is responsible for administering the Endangered Species Act (ESA) for marine and anadromous species including the shortnose sturgeon. Under the direction of Section 4(f) of the ESA, the NMFS developed a recovery plan to work towards delisting the shortnose sturgeon, which was listed as endangered on March 11, 1967 (32 [FR] 4001). The goal of the recovery plan is to delist shortnose sturgeon populations throughout their range. The long-term recovery objective for the shortnose sturgeon is to recover all discrete population segments to levels of abundance at which they no longer require protection under the ESA by establishing listing criteria for shortnose sturgeon population segments, protecting shortnose sturgeon and their habitats, rehabilitating shortnose sturgeon populations and habitats, as well as implementing recovery tasks. The Project is not located on a river managed for the shortnose sturgeon, and this plan is, therefore, not applicable to the Project.

National Park Service. The Nationwide Rivers Inventory. Department of the Interior, Washington, D.C. 1993.

The Project location is included in the inventory of this management plan and it is a comprehensive study of one or more of the beneficial uses of a waterway, waterways, and/or water body. It specifies the standards, data, and methodology used in the inventory and is filed with the Secretary of the Commission. The reach from Fife Brook downstream to Charlemont was noted for the following Outstandingly Remarkable Values:

- Fish – River is an historic Atlantic salmon fishery; and
- History – Segment parallels the Mohawk Trail, the principal route for expeditions against English settlements during French and Indian Wars.

Technical Committee for Fisheries Management of the Connecticut River. 1981. Connecticut River Basin Fish Passage, Flow, and Habitat Alteration Considerations in Relation To Anadromous Fish Restoration. Hadley, MA. October 1981.

The Technical Committee for Fisheries Management of the Connecticut River 1981 Connecticut River Basin Fish Passage, Flow, and Habitat Alterations Considerations in Relation to Anadromous Fish Restoration report is divided into the three sections, each of which addresses an area critical to the restoration of anadromous fish. The first section addresses fish passage requirements associated with the program, the second section discusses the relationship between river flows and the restoration effort, and the third section delineates reaches of the river that are important to anadromous fish. While the Deerfield River is a tributary to the Connecticut River, this plan is not directly related to the Deerfield River, and this plan is, therefore, not applicable to the Project.

U.S. Fish and Wildlife Service. 1989. Atlantic salmon restoration in New England: Final environmental impact statement 1989-2021. Department of the Interior, Newton Corner, MA. May 1989.

The United States Fish and Wildlife Service (USFWS) 1989 Atlantic salmon restoration in New England: Final environmental impact state, proposes to restore self-sustaining populations of Atlantic salmon by the year 2021 to the species' historical range in New England. To accomplish the goal, USFWS will:

- Utilize USFWS hatcheries and Fisheries Assistance field stations to reestablish and evaluate salmon populations;
- Consider the needs of salmon restoration in the process of reviewing Federal projects, permits, and licenses;
- Provide funding to state agencies for salmon restoration through the administration of the Federal Aid programs; and
- Conduct research on the biology of the Atlantic salmon.

USFWS states that effective upstream and downstream fish passage is a fundamental requirement of the goal of restoring self-sustaining populations of Atlantic salmon by the year 2021. Excluding landlocked Atlantic salmon that have been introduced into the DRP's Somerset and Harriman reservoirs and the introduction of landlocked American smelt in the DRP's Somerset, Harriman, Searsburg, and Sherman reservoirs, the natural movements of anadromous

migratory species are presently confined to the lower Deerfield River below the Deerfield No. 2 station (FERC 1996). Until 2012, the Deerfield River was also stocked with juvenile Atlantic salmon (approximately 600,000 per year) as part of the multistate Connecticut River Atlantic Salmon Restoration Program. The program was discontinued in 2012 due to low adult returns (USFWS 2013). The Deerfield River is not actively stocked with Atlantic salmon as a part of USFWS's initiative, and therefore, this plan is not applicable to the Project.

U.S. Fish and Wildlife Service. Canadian Wildlife Service. 1986. North American Waterfowl Management Plan. Department of the Interior. Environment Canada. May 1986.

The USFWS 1986 North American Waterfowl Management Plan, updated in 1998, expands on the 1986 Plan seeking to restore waterfowl populations in Canada, the United States, and Mexico to levels recorded during the 1970s, which was considered a benchmark decade for waterfowl. The plan outlines the following three visions to advance waterfowl conservation:

1. Ensure that Plan implementation is guided by biologically based planning and is refined through ongoing evaluation.
2. Define the landscape conditions needed to sustain waterfowl and other wetland associated species. Participate in the development of conservation, economic, management, and social policies and programs that affect the ecological health of these landscapes.
3. Collaborate with other conservation efforts and reach out to other sectors and communities to form alliances.

These visions are designed to improve the status of North America's waterfowl, promote sustainable landscapes, and broaden partnerships internationally, nationally, regionally, and locally. The Project is not located on in an area managed for waterfowl, and this plan is, therefore, not applicable to the Project.

H.2.8.2 Commonwealth of Massachusetts Comprehensive Plans

Massachusetts Department of Environmental Management. Commonwealth Connections: A Greenway Vision for Massachusetts. Boston, Massachusetts.

The Massachusetts Department of Environmental Management Commonwealth Connections works to create a vision for the future of greenways and trails to help focus efforts on critical

areas and energize support for implementing projects throughout Massachusetts. It incorporates input of grassroots activists, representatives from state and federal agencies, municipalities, various user groups, non-profit organizations, and the private sector. This document provides seven recommendations for securing the Massachusetts Greenway Vision, which reflect the themes and priorities of greenway and trail leaders. Each recommendation is followed by a series of specific strategies for implementation. Protection of the Connecticut River corridor and its network of tributaries, including the Deerfield River, is one of the components of the vision of the Commonwealth Connections. No additional information is provided on the Deerfield River.

Massachusetts Department of Environmental Quality Engineering. 1983. Connecticut River Basin Water Quality Management Plan. Westborough, MA. June 1983.

The Massachusetts Department of Environmental Quality Engineering 1983 Connecticut River Basin water quality management plan relates to water quality information on the portion of the Connecticut River Basin in the State of Massachusetts and updates the 1975 plan. It includes a section on water quality, wastewater discharges and abatement programs, combined sewer and stormwater discharges, wasteload allocations, non-point pollution, toxic pollutants, and future monitoring programs.

Massachusetts Department of Fish and Game. 2006. Comprehensive Wildlife Conservation Strategy. West Boylston, MA. September 2006.

The goal of the Massachusetts Department of Fish and Game 2006 Comprehensive Wildlife Conservation Strategy (CWCS) is to conserve the wildlife biodiversity of Massachusetts. The plan identifies the habitats and species in the greatest need of conservation and list the primary strategies used to conserve these species and their habitats. It is organized around 22 habitat types ranging from large-scale habitats (i.e. large unfragmented landscape mosaics) to small-scale habitats (i.e. vernal pools). The plan identifies 257 animal species in greatest need of conservation within these habitat types and provides a summary for each species including distribution, life-history information, and a list of key threats.

Massachusetts Executive Office of Energy and Environmental Affairs. Statewide Comprehensive Outdoor Recreation Plan (SCORP) 2012. Boston, MA.

The Massachusetts Executive Office of Energy and Environmental Affairs (MEOEEA) 2012 Statewide Comprehensive Outdoor Recreation Plan (SCORP) helps guide the distribution of federal funding from the Land and Water Conservation Fund (LWCF) to state agencies and municipalities for the acquisition of open space, renovation of parks, and development of new parks. In Massachusetts, the LWCF is administered through the Executive Office of Energy and Environmental Affairs (EEA). The SCORP provides information on population trends, economics, and the history of outdoor recreation in Massachusetts. It discusses the state and demand of outdoor recreation in the state and identifies goals and objectives of the SCORP. The four goals identified in the SCORP are: 1) increase the availability of all types of trails for recreation; 2) increase the availability of water-based recreation; 3) invest in recreation and conservation areas that are close to home for short visits; and 4) invest in racially, economically, and age diverse neighborhoods given their projected increase in participation in outdoor recreation. The Deerfield River in proximity to the Bear Swamp Project is highly utilized for many different recreational activities.

Massachusetts Executive Office of Energy and Environmental Affairs. Deerfield River Watershed 5-year Action Plan 2004 – 2008. Boston, MA.

The MEOEEA Deerfield River Watershed Action Plan was developed to guide local and state environmental efforts within the Deerfield River Watershed over the next five years. The plan identifies the goals of the EEA including improving water quality, restoring natural flows to rivers, protecting and restoring biodiversity and habitats, improving public access and balanced resource use, improving local capacity, and promoting a shared responsibility for watershed protection and management. It was developed with input from multiple stakeholders and identifies specific priorities for the watershed.

H.2.8.3 Other Management Plans

Franklin Regional Council of Governments. 2002. Mohawk Trail Scenic Byway Corridor Management Plan 2002. Pittsfield, MA. http://frcog.org/publication/mohawk-trail-west-scenic-byway-corridor-management-plan/.

The Franklin Regional Council of Governments (FRCOG) 2002 Mohawk Trail Scenic Byway spans between Greenfield and Williamstown in Massachusetts. The intent of the Mohawk Trail

Scenic Byway Corridor Management Plan is to recognize, interpret, preserve, and promote the unique scenic, natural, recreational, historical, cultural, and archaeological resources of the Mohawk Trail in Franklin and Berkshire Counties. The specific purposes of the management plan are to:

- Identify and develop strategies to preserve the unique scenic, natural, and cultural resources along the byway;
- Expand economic opportunities related to heritage and recreational tourism along the byway;
- Develop a land protection program for scenic and historic landscapes along the byway;
- Develop a recreational program that identifies and establishes linkages to hiking trails, states forests, river access points, and other cultural and recreational features along the byway; and
- Actively involve the public, through regional advisory committees and a participatory planning process, in the shaping of a corridor management plan for the Byway.

Franklin Regional Council of Governments. 2012. Draft 2012 Regional Transportation Plan. Greenfield, MA.

The FRCOG Regional Transportation Plan was updated in 2016. The Regional Transportation Plan (RTP) is a planning document that details existing conditions, identified current deficiencies, and projects future needs related to transportation systems for a particular geographical area. The RTP is required to forecast the transportation needs of the region for the next 25 years. The RTP highlights the strong demand for expanded public transit services either through the establishment of new routes to unserved areas of the region or the initiation of additional service runs on existing routes. The Project does not directly affect the RTP, and therefore, this plan is not applicable to the Bear Swamp Project.

Franklin Regional Council of Governments. 2016. Greater Franklin County Comprehensive Economic Development Strategy (CEDS) Plan. Greenfield, MA.

The FRCOG 2016 Greater Franklin County Comprehensive Economic Development Strategy (CEDS) is an economic development plan to forward policies, programs, and projects to encourage economic activities in the Greater Franklin County area. The 2015 CEDS Plan identified strategies to be implemented over five years in key areas to achieve this vision for Franklin County's economy. This 2016 Annual Report is the first of four updates to describe changes in economic conditions, report on project implementation, and reflect the region's evolving needs and opportunities for economic prosperity.

Franklin County Planning Department. 1990. Deerfield River Comprehensive Management Plan. Greenfield, Massachusetts. June 1990.

In 1988, the Deerfield River Watershed Association (Association) was formed for the purpose of protecting and enhancing the resources of the Deerfield River watershed. The two power companies at the time, BSPC's predecessor New England Power Company, and Northeast Utilities, supported the planning effort. The Association developed the Deerfield River Comprehensive Management Plan which was developed to address seven goals identified by the advisory committee. These seven goals are:

- Improve and protect water quality throughout the river basin.
- Protect open space within the river basin in order to protect habitat and the rural character of communities.
- Manage the river for multipurpose uses, including hydropower and recreation, in a manner which, wherever possible, enhances the existing ecosystem and/or at least minimizes the negative impact on that ecosystem.
- Establish the Deerfield River Compact to work with communities to implement the plan, ensure compatible zoning, and review developments with a regional impact.
- Guide residential, commercial, and industrial development through zoning and other appropriate measures to protect resources and to ensure that new development does not exceed infrastructure of towns.
- Increase recreational use of all types and provide appropriate facilities for these uses.
- Enhance fisheries throughout the river.

H.2.9 Financial and Personnel Resources

BSPC is a limited liability company jointly owned indirectly by Brookfield Renewable and Emera, Inc. Brookfield Renewable has considerable experience operating not only the Bear Swamp Project but other hydroelectric projects as well. Brookfield Renewable has available a complete staff of engineers, biologists, operators, mechanics, and electricians that are trained and experienced in the operation of hydroelectric projects. The Project is fully staffed with maintenance/operations personnel, engineers and a Project Supervisor. If required, BSPC can contract with contractors to undertake larger scale maintenance or upgrade projects. In addition, BSPC has available the administrative, licensing, and support personnel that are needed to maintain compliance with the terms of the license.

Information regarding the Project's expected annual costs and value are provided in Exhibit D of the License Application.

H.2.10 Notification of Affected Land Owners

The Licensee does not propose to expand the Project to encompass additional lands of others. Therefore, notification of adjacent landowners is not applicable.

H.2.11 Applicant's Electricity Consumption Efficiency Improvement Program

Because the Licensee is an independent power producer, this section is not applicable to the Project.

H.2.12 Identification of Indian Tribes Affected by the Project

The Project is not located on Indian Reservation lands and BSPC does not believe there are any federally recognized Indian tribes affected by the Project.

H.3 Information to be Provided by an Applicant Who is an Existing Licensee

H.3.1 Measures Planned to Ensure Safe Management, Operation, and Maintenance of the Project

The Bear Swamp Project is manned 24 hours a day, 7 days a week at the Bear Swamp PSD powerhouse. On-site staff coordinate and verify Bear Swamp PSD and FBD operations in conjunction with BSPC's North American System Control Center (NASCC) in Marlborough, Massachusetts which is also manned on a 24-7 basis.

Local operators are available during weekdays and weekends as necessary to perform routine maintenance and operations of the facility. Daily logs of reservoir levels, flow, and outages are maintained electronically for the Project.

The Licensee has a sound compliance history for the Project. The FERC New York Regional Office conducts regular Part 12 and environmental inspections. The Licensee completes all necessary corrective actions to address comments and recommendations arising from FERC inspections in a timely manner.

The Project maintains compliance with FERC's Emergency Action Plan (EAP) requirements. BSPC conducts an annual field reconnaissance upstream and downstream of the Project to verify that no changes have occurred that would reasonably be expected to adversely affect public health, safety, or property in the event of a dam failure. Further, BSPC maintains and annually verifies the accuracy of a contact list to be used in the event of a dam failure at the Project. An independent inspection by the Licensee's engineering staff is also conducted annually and routine repairs are performed as needed.

H.3.1.1 Existing and Planned Operation of the Project During Flood Conditions

The Bear Swamp PSD and its pumped-storage operation is independent of operations on the Deerfield River. However, as significant flood events develop and occur along the Deerfield River, BSPC will fill the Upper Reservoir and avoid Bear Swamp PSD generation, and BSPC will strive to keep the Lower Reservoir as close to the minimum elevation necessary to pass flood inflows from upstream. The largest high flow or flood risk associated with the Bear Swamp PSD is the very low probability risk of overfilling the Upper Reservoir. To mitigate this risk, multiple, redundant monitoring and action procedures exist in the form of 24-7 real-time video surveillance in both the powerhouse and NASCC, redundant, independent Upper Reservoir level monitoring systems and multi-path Supervisory Control and Data Acquisition (SCADA) and communication networks. Individually or collectively any of these systems allows for the shutdown of the station either automatically, manually by on-site staff, or remotely by NASCC staff, and the functionality of these systems is verified daily. In the unlikely event that none of these systems lead to timely shutdown, the Upper Reservoir emergency spillway is sized such that it can accommodate the maximum Bear Swamp PSD pumping capacity without overtopping the crest elevation of any of the four upper reservoir dikes (each at elevation 1,606 feet). BSPC

has safely operated and maintained the Bear Swamp PSD such that it has never had to make use of the emergency spillway.

When DRP Station No. 5 inflow to the Lower Reservoir exceeds the capacity of the Fife Brook turbine, the two Tainter gates are used to pass excess inflow. The maximum combined discharge through the FBD is 64,095 cfs when the impoundment is at elevation 870 feet, and 107,113 cfs when at the dam crest elevation of 880 feet.

As context, the Probable Maximum Flood (PMF) and the Inflow Design Flood (IDF) at the Bear Swamp Project are each calculated to be 84,000 cfs. The maximum flood of record reported by the USGS at its Charlemont gage is 56,300 cfs on September 21, 1938, and Hurricane Irene resulted in the second largest flood at Charlemont of 54,000 cfs on August 28, 2011.

A detailed description of the existing and planned operation of the Project is contained in Exhibit B of this License Application.

H.3.1.2 Warning Devices Used to Ensure Downstream Public Safety

There are numerous safety signs at the Project and along the Deerfield River advising the public of the Project and safety considerations.

When the upstream DRP Station No. 5 is generating (and regardless of whether Bear Swamp PSD is pumping, generating, or idle), the FBD will generate at a level to effectively follow the timing and magnitude of inflow provided by Station No. 5.

Each day the DRP licensee provides BSPC with its planned flow schedule for the following day, and BSPC will schedule the FBD to generally follow the DRP licensee's schedule while accounting for provision of the 125 cfs minimum flow and required whitewater releases. Based on the schedule received from the DRP licensee, BSPC publishes public notification of expected Fife Brook outflows on the Internet using the WaterLine FlowCast© system at www.h2oline.com. If the DRP licensee changes its schedule, BSPC updates the WaterLine forecast as soon as practicable and adjusts the Fife Brook schedule as necessary. When making the transition from the 125 cfs minimum flow discharge to the higher scheduled discharge level, BSPC:

a) Turns on strobe lights on Fife Brook Dam and sounds an alarm to provide visual and audible warnings, and
b) Brings the Fife Brook powerhouse up to its scheduled discharge.

When making the transition from generation back to the 125 cfs minimum flow level, the minimum flow pipe is opened first before the unit is brought off-line. In the event of a unit trip, the control system automatically opens the minimum flow system.

H.3.1.3 Proposed Changes Affecting the Existing Emergency Action Plan

As noted above the Project is in compliance with FERC's Emergency Action Plan (EAP) requirements. BSPC conducts an annual field reconnaissance upstream and downstream of the Project to verify that no changes have occurred that would reasonably be expected to adversely affect public health, safety, or property in the event of a dam failure. Further, BSPC maintains and annually verifies the accuracy of a contact list to be used in the event of a dam failure at the Project.

H.3.1.4 Existing and Planned Monitoring Devices

[To be provided in the Final License Application.]

H.3.1.5 Project's Employee and Public Safety Record

[To be provided in the Final License Application.]

The Licensee is committed to maintaining and operating its facilities in a manner that allows the public to safely enjoy recreational activities.

H.3.2 Current Operation of the Project

A description of the Project operation is contained in Exhibit B of this License Application.

H.3.3 Project History

A description of the Project history is contained in Exhibit C of this License Application.

H.3.4 Lost Generation Due to Unscheduled Outages

[The record of unscheduled outages and related lost generation during the last five years will be provided in the Final License Application.]

H.3.5 Licensee's Record of Compliance

The Project has a good record of compliance with the terms and conditions of the existing license. A review of the Licensees' records indicates no violations of the terms and conditions of the license. In addition, the Licensee has not received any communication from the Commission indicating possible noncompliance.

H.3.6 Actions Affecting the Public

The Licensee generally allows public access to the Project and the surrounding Project lands; the Licensee however will restrict public access to specific areas that pose a threat to public safety. The Licensee provides public recreation access at several formal recreation sites that provide opportunities for a wide array of recreational opportunities to the public (e.g. whitewater boating, bank fishing).

A full description of these opportunities, associated recreational facilities provided by the Licensee, and the recreational enhancement proposed are contained in Exhibit E of this application. The Licensee is proposing a Recreation Facilities Management Plan for the Project.

Generation at hydropower facilities generally offsets the need for increased operation at existing baseload facilities, such as oil or coal-fueled generation plants. Fossil-fueled plants produce atmospheric pollutants that must be controlled at significant costs. The avoided cost of air pollution, therefore, is a public benefit of hydroelectric generation.

The Licensee's regard for public safety is demonstrated by its active program of installing warning signs and safety devices at the Project.

H.3.7 Ownership and Operating Expenses That Would Be Reduced if the License Were Transferred

The current Licensee is applying for a long-term license to continue to maintain and operate the Project. Additionally, there is no competing application to take over the Project. Because there is no proposal to transfer the Project license, this section is not applicable to the Project.

H.3.8 Annual Fees for Use of Federal or Native American Lands

This section is not applicable to the Project since it uses no federal or Native American lands.