PRE-APPLICATION DOCUMENT

GORHAM HYDROELECTRIC PROJECT
FERC PROJECT NO. 2288

Prepared for:

Central Rivers Power NH

Manchester, New Hampshire

Prepared by:

Kleinschmidt

July 2019

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DEFINITIONS OF TERMS, ACRONYMS, AND ABBREVIATIONS

ACHP	Advisory Council on Historic Preservation
AD	Anno Domini
af	Acre-foot, the amount of water needed to cover one acre to a depth of one foot
ALT	Androscoggin Land Trust
APE	Area of Potential Effect as pertaining to Section 106 of the National Historic Preservation Act as amended
Applicant	Central Rivers Power
ATV	All-terrain vehicle
BC	Before Christ
CEII	Critical Energy Infrastructure Information
CFR	Code of Federal Regulations
cfs	cubic feet per second
Commission	Federal Energy Regulatory Commission
CWA	Clean Water Act
DLA	Draft License Application
DO	dissolved oxygen
DOE	U.S. Department of Energy
DOI	U.S. Department of Interior
DOT FHA	Department of Transportation Federal Highway Administration
DSSMP	Dam Safety Surveillance and Monitoring Program and Report
EA	Environmental Assessment
EAP	Emergency Action Plan
EFH	Essential Fish Habitat
EIS	Environmental Impact Statement
EL	Elevation
ESA	Endangered Species Act
ESFB	Eastern small footed bat
FEMA	Federal Emergency Management Agency
FERC	Federal Energy Regulatory Commission
FLA	Final License Application
FOIA	Freedom of Information Act
FPA	Federal Power Act
FWCA	Fish and Wildlife Coordination Act
GIS	Geographic Information Systems
GWh	Gigawatt-hour (equals one million kilowatt-hours)
Hp	Horsepower
Hz	hertz (cycles per second)

HPMP	Historic Properties Management Plan
ILP	Integrated Licensing Process
Installed Capacity	The nameplate MW rating of a generator or group of generators
Interested Parties	The broad group of individuals and entities that have an interest in a proceeding
IPaC	Information of Planning and Consultation
kV	Kilovolts
KVA	Kilovolt amps
kW	kilowatt
kWh	kilowatt-hour
License Application	Application for New License submitted to FERC no less than two years in advance of expiration of an existing license. See DLA
Licensee	Central Rivers Power
LBB	Little brown bat
LWCF	Land and Water Conservation Fund
MBI	Midwest Biodiversity Institute
Mg/L	Milligram per liter
MSL	Mean sea level
MW	megawatt
MWh	megawatt-hour
NEPA	National Environmental Policy Act
NGO	Non-governmental organization
NHPA	National Historic Preservation Act
NHESCA	New Hampshire Endangered Species Conservation Act
NHDCR	NH Department of Cultural Resources
NHDES	NH Department of Environmental Services
NHDHR	NH Division of Historical Resources
NHDRED	NH Department of Resources and Economic Development
NHF&G	NH Fish and Game Department
NHNHB	NH Natural Heritage Bureau
NHNHI	NH National Heritage Inventory
NHOEP	NH Office of Energy and Planning
NWI	National Wetlands Inventory
PAD	Pre-Application Document
Peaking	Operation of generating facilities to meet maximum instantaneous electrical demands
Penstock	An inclined pressurized pipe through which water flows from a forebay or tunnel to the powerhouse turbine
PDF	Portable Document Format

PFMA	Probably Failure Mode Analysis
PLP	Preliminary Licensing Proposal
PM&E	Protection, Mitigation and Enhancement Measures
PMF	Probable Maximum Flood
Project	FERC Project No. 2288, Gorham Project
Project Area	The area within the FERC Project Boundary
Project Boundary	The boundary line defined in the Project license issued by FERC that surrounds those areas needed for operation of the Project. In the case of the Gorham Hydroelectric Project, the project boundary encompasses the impoundment up to approximately 4,700 feet from the dam and just below the dam. The project boundary includes the dam and the powerhouse.
pH	The scale of acidity from 0 to 14. It tells how acidic or alkaline a substance is.
Project Impoundment	The 32-acre impoundment on the Androscoggin River, impounded by Gorham Dam.
PSNH	Public Service of New Hampshire
PSP	Proposed Study Plan
Project Vicinity	The general geographic area in which the Project is located; for this PAD, Gorham, Maine
QC	quality control
Relicensing	The process of acquiring a new FERC license for an existing hydroelectric Project upon expiration of the existing FERC license
Relicensing Participants	Individuals and entities that are actively participating in a proceeding
Resource Affected Area	The geographic area in which a specific resource is potentially affected by the Project
REA	Ready for Environmental Assessment
RM	River mile
Run-of-river	A hydroelectric Project that uses the flow of a stream with little or no reservoir capacity for storing water
RSP	Revised Study Plan
SD	Scoping Document
Service List	A list maintained by FERC of parties who have formally intervened in a proceeding. In relicensing, there is no Service List until the license application is filed and accepted by FERC. Once FERC establishes a Service List, any documents filed with FERC must also be sent to the Service List
SHPO	State Historic Preservation Officer
SPD	Study Plan Determination
STID	Supporting Technical Information Documents
SWQPA	Shoreland Water Quality Protection Act
Tailrace	Channel through which water is discharged from the powerhouse turbines

TCB	Tri-colored bat
T&E Species	Threatened and endangered species, which for purposes of this PAD is defined to include (1) all botanical species listed as threatened or endangered identified as occurring within the project boundary or immediate vicinity; (2) all wildlife species listed as threatened or endangered identified as occurring within Coos County; (3) all federal wildlife species listed as threatened or endangered for Coos County identified by the USFWS and NMFS and (4) species identified during other surveys or through consultation with the resource agencies.
TLP	Traditional Licensing Process
TU	Trout Unlimited
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USEPA	U.S. Environmental Protection Agency
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WQC	Water Quality Certificate

1.0 INTRODUCTION

Central Rivers Power NH, LLC (CRP) is filing with the Federal Energy Regulatory Commission (FERC or the Commission) its Notification of Intent (NOI) to relicense the 2.15 MW Gorham Hydroelectric Project (FERC Project No. 2288). The Gorham Hydroelectric Project consists of a 20-foot-high timber crib dam, a reservoir with a surface area of 32 acres, a spillway, a power canal, a powerhouse containing four generating units, located on the Androscoggin River in Coos County, New Hampshire. CRP is not proposing to add capacity or make any physical modifications to the Project under the new license. The current license will expire on July 31, 2024.

CRP will be applying for license renewal using the Commission's Integrated Licensing Process (ILP). As required under the ILP and its accompanying regulations (18 CFR §5.6), this pre-application document (PAD) is being filed simultaneously with the NOI and will be distributed to federal and state resource agencies, local governments, Indian tribes and members of the public interested in the application. The purpose of this PAD is to: (1) describe the existing facility and current and proposed operations at the Gorham Hydroelectric Project, and (2) summarize existing information and studies that CRP gathered during the PAD process that are relevant to the evaluation of the Gorham Project impact on the area.

In compliance with the Commission's regulations governing the content of the PAD, CRP contacted appropriate state and federal resource agencies and interested public parties concerning the Project's impact on the Androscoggin River. CRP requested that contacted parties provide any relevant studies on topics such as water quality, fisheries, recreation, wildlife and archaeology in the area surrounding the Project.

This document will enable all state and federal resource agencies and interested public parties access to existing information on resource issues in the Project area. The document will also

provide the parties with information needed during the National Environmental Policy Act (NEPA) scoping process to be conducted by the Commission.

As set forth in 18 CFR §5.6, the Commission will issue Scoping Document 1 (SD 1) within 60 days of CRP's filing of the PAD and hold a public scoping meeting and site visit within 30 days of issuing SD 1.

The information contained in this document was assembled based on the requirements set forth in 18 CFR §5.6 and is organized as follows:

Section 2.0 – Process plan and schedule for all pre-application activity, including the proposed location and date for the scoping meeting and site visit. 18 CFR §5.6(d)(1).

Section 3.0 – Proposed communication protocol for open communications including using meetings, documents, email, Internet, and telephone.

Section 4.0 - General description of the project location, facilities and operations. 18 CFR §5.6(d)(2).

Section 5.0 – Description of existing environmental and resource impacts. 18 CFR §5.6(d)(3).

Section 6.0 – Preliminary resource issues and potential studies or information gathering needs associated with the issues. 18 CFR §5.6(d)(4).

Section 7.0 – Literature and information sources cited in the descriptions and summaries of existing resource data. 18 CFR §5.6(c)(2).

Appendices – Summary of contacts made in preparing the PAD and maps, flow duration curves and related information supporting the sections above and requirements of 18 CFR §5.6(d) include authorized agents in Appendix A.

2.0 PROCESS PLAN AND SCHEDULE

FERC's ILP regulations[1] define specific procedures and timelines for the relicensing process. FERC designed the ILP, the current default relicensing process, to be a transparent process that involves all interested parties including Native American tribes, agencies, Non-Governmental Organizations (NGOs), and the public. As such, CRP will carefully document the entire process including any information received from the interested parties, as well as records of communications. To keep the interested parties informed of the process, CRP will maintain records of relicensing and other information that will be available to the public at CRP's office at 59 Ayers Island Road in Bristol, NH.

The Process Plan and Schedule outlines actions by the FERC, Licensees, and other participants in the licensing process through filing of the License Application and issuance of the new license (Table 2-1). The Licensee developed the Process Plan and Schedule based upon filing the FLA on July 31, 2022. All subsequent dates given derive from that date. Readers should note that FERC regulations provide for a six-month window for filing the NOI/PAD; the PAD must be filed between 5.5 and 5 years before the license expiration. The License Application must be filed no later than two years before license expiration, but could be filed earlier.

CRP developed the Process Plan and Schedule using the timeframes set forth in 18 CFR Part 5 (ILP). Additionally, in developing the Process Plan and Schedule, CRP has included timeframes for Formal Dispute Resolution (18 CFR § 5.14) even though any study disputes may be resolved through informal dispute resolution. Because there is flexibility in the dates given, the Process Plan and Schedule is subject to change throughout the relicensing.

[1] For more details on FERC licensing processes go to www.ferc.gov.

TABLE 2-1 PROPOSED PROCESS SCHEDULE

RESPONSIBLE ENTITY	LICENSE APPLICATION SCHEDULE MILESTONES	TIMEFRAME	FERC REGULATION
CRP	File NOI And PAD (5 to 5.5 years before expiration)	7/26/2019	5.5 & 5.6
CRP	Request FERC Designate CRP as Non- Federal Representative for Section 106 Consultation	7/26/2019	5.5(e)
CRP	Request FERC Designate CRP as Non-Federal Representative for ESA Consultation	7/26/2019	5.5(e)
FERC	Notice of Commencement of Proceeding and issuance of Scoping Document 1 (w/in 60 days of filing NOI/PAD)	9/24/2019	5.8
FERC	Hold Site Visit and Scoping Meetings (w/in 30 days of FERC Notice of Proceeding)	10/24/2019	5.8(b)(3)(viii)
Participants	File Comments on PAD/SD1 and Study Requests (w/in 60 days of FERC Notice of Proceeding)	11/23/2019	5.9(a)(b)
FERC	Issue Scoping Document 2 (w/in 45 days of SD1 comments)	1/7/2020	5.1
CRP	File Proposed Study Plan (PSP) (w/in 45 days of PAD comments)	1/7/2020	5.11(a)
CRP	Hold PSP Initial Meeting with Participants (w/in 30 days of PSP)	2/6/2020	5.11(e)
Participants	File Comments on PSP (w/in 90 days of filing PSP)	4/6/2020	5.12
CRP	File Revised Study Plan (RSP) (w/in 30 days of PSP comments)	5/6/2020	5.13(a)
Participants	File Comments on RSP (w/in 15 days of RSP)	5/16/2020	5.13(b)
FERC	Issue Study Plan Determination (SPD) (w/in 30 days of RSP)	6/5/2020	5.13(c)
Participants	File any Study Disputes (w/in 20 days of SPD)	6/25/2020	5.14(a)
Dispute Resolution Panel	Dispute Resolution Panel Convenes (w/in 20 days of dispute)	7/15/2020	5.14(d)
CRP	File Comments and Information Regarding Dispute (w/in 25 days of dispute)	8/9/2020	5.14(i)
Dispute Resolution Panel	Issue Dispute Recommendations (w/in 50 days of dispute)	8/14/2020	5.14(k)

RESPONSIBLE ENTITY	LICENSE APPLICATION SCHEDULE MILESTONES	TIMEFRAME	FERC REGULATION
FERC	Issue Director's Study Dispute Determination (w/in 70 days of dispute)[2]	9/3/2020	5.14(l)
CRP	First Study Season		5.15
CRP	File Initial Study Report (w/in 1 year of SPD)	6/5/2021	5.15(c) (1)
CRP	Hold Initial Study Report Meeting (w/in 15 days of Initial Study Report)	6/20/2021	5.15(c)(2)
CRP	File Initial Study Report Meeting Summary/Changes to Study Plan (w/in 15 days of Initial Study Report Meeting)	7/5/2021	5.15(c)(3)
Participant	File Any Study Plan Disputes/Amendment Requests (w/in 30 days of Initial Study Report Meeting Summary)	8/4/2021	5.15(c)(4)
Participants	File Responses to any Study Plan Disputes/Amendment Requests (w/in 30 days of any Disputes/Amendment Requests)	9/3/2021	5.15(c)(5)
FERC	Issue Director's Determination on any Study Plan Disputes/Amendment Requests (w/in 30 days of Responses)	10/3/2021	5.15(c)(6)
CRP	Second Study Season (if necessary)		5.15
CRP	File Updated Study Report (w/in 2 years of SPD)	6/5/2022	5.15(f) & 5.16(c)
CRP	Hold Updated Study Report Meeting (w/in 15 days of Updated Study Report)	6/20/2022	5.15(f)
CRP	File Updated Study Report Meeting Summary/Changes to Study Plan (w/in 15 days of Updated Study Report Meeting)	7/5/2022	5.15(f)
Participants	File any Study Plan Disputes/Amendment Requests (w/in 30 days of Updated Study Report Meeting Summary)	8/4/2022	5.15(f)
CRP	File Responses to any Study Plan Disputes/Amendment Requests (w/in 30 days of any Disputes/Amendment Requests)	9/3/2022	5.15(f)
FERC	Issue Director's Determination on any Study Plan Disputes/Amendment Requests (w/in 30 days of Responses)	10/3/2022	5.15(f)

[2] FERC may not need to issue a SD2.

RESPONSIBLE ENTITY	LICENSE APPLICATION SCHEDULE MILESTONES	TIMEFRAME	FERC REGULATION
CRP	File PLP, draft Biological Assessment (if any), and draft Historic Properties Management Plan (if any) (no later than 150 days prior to deadline for Final License Application)	1/22/2022	5.16(a)(b)
Participants	File Comments on PLP (w/in 90 days of PLP)	4/22/2022	5.16(e)
CRP	File Final License Application (FLA) (w/in 24 months of license expiration)[3]	7/31/2022	5.17(a)
FERC	Issue Notice of FLA (w/in 14 days of FLA)	8/14/2022	5.19(a)
FERC	Issue Director's Determination on any Additional Study Requests and Notification of any Deficiencies (w/in 30 days of FLA)	8/31/2022	5.19(d) & 5.20(a)(2)
FERC	Issue FERC Acceptance Notice and Ready for Environmental Analysis (REA) Notice	TBD	5.22
Participants	File Comments, Interventions and 10(a) Recommendations (w/in 60 days of FERC Acceptance Notice)	TBD	5.23(a)
Agencies	File 10(j) Recommendations	TBD	5.23(a)
CRP	Request Water Quality Certificate (WQC) from WVDEP (w/in 60 days of REA notice)	TBD	5.23(b)
FERC	Issue Single Environmental Assessment (EA)[4]; Issue Biological Assessment (if any); Issue draft Programmatic Agreement for Historic Properties (if any)	TBD	5.24(a)
Participants	File Comments on EA (w/in 30 days of EA)	TBD	5.24(c)
NHDES	Issue Final WQC	TBD	N/A
FERC	Issue a New License Order	TBD	FPA

[3] A license application must be filed by July 31, 2022 (current license expires July 31, 2024)
[4] FERC will likely issue a "Single EA" (without a draft EA)

3.0 PROPOSED COMMUNICATIONS PROTOCOLS

Effective communication is essential for a timely, cost-effective licensing. The Licensee's goal is to maintain open communication during the licensing process and to provide public access to relevant project licensing information. The Licensee anticipates that it will use meetings, documents, email, Internet, and telephone to communicate as described below.

3.1 TELEPHONE

The Licensee anticipates that telephone calls among interested parties and licensing participants will be treated informally, with no specific documentation unless specifically agreed upon in the discussion or as part of formal agency consultation proceedings.

3.2 EMAIL AND WEBSITES

The Licensee anticipates distribution of relevant documents and submittal of comments, correspondence, and study requests from agencies will be largely conducted electronically, either by electronic filing of documents with the FERC or via e-mail distribution. In addition, some formal agency consultation proceedings and correspondence may, as a matter of convenience and expediency, occur electronically or via e-mail. The Licensee will maintain documentation of all electronic correspondence as part of formal agency consultation proceedings.

The FERC makes information available to the public through FERC's eLibrary, which is a records information system on the Internet that contains documents submitted to and issued by the FERC. The eLibrary can be accessed through the FERC's homepage, at http://www.ferc.gov, or directly at http://elibrary.ferc.gov/IDMWS/search/fercgensearch.asp. Documents filed with the FERC as part of the Project licensing process are available for viewing and printing via eLibrary. Interested parties can also subscribe to the Docket P-2288 for the Project under eSubscription on the Commission's website to receive notices of issuance and filings by e-mail.

3.3 MEETINGS

The Licensee will work with interested parties to develop meeting schedules that include practical locations and times to accommodate the majority of participants. In general, the Licensee will schedule meetings, other than FERC Scoping Meetings, between the hours of 9:00

a.m. and 4:00 p.m. FERC Scoping Meetings will include at least one daytime and one evening meeting. The Licensee will make every effort to begin and end meetings on time.

To the extent possible, the Licensee will notify all interested parties in advance of the next planned public meeting. At that time, the Licensee will provide a meeting agenda via mail and/or e-mail. The Licensee will also distribute any documents or other information that will be the subject of meeting discussions.

Meetings, other than FERC scheduled meetings, will be held at the Town and Country Inn in Gorham, NH, or at another suitable alternative location. Pursuant to 18 CFR § 5.8 (b)(3)(viii), FERC will notice the final dates, times and locations of the FERC Scoping Meetings and publish that information in local papers shortly after the filing of the NOI and PAD. When possible, meetings for the J. Brodie Smith and Gorham relicensings will be held together.

3.4 DOCUMENTS

3.4.1 MAILING LISTS

There are two categories of participation in a FERC relicensing and each requires different notification or frequency and type of communication. “Interested parties” are a broad group of individuals, government agencies, and NGOs that have an interest in the licensing; sometimes this group is referred to as "stakeholders." The Licensee will maintain a Gorham Project Licensing Mailing List of all interested parties. The list will include both standard U.S. Post Office addresses and available e-mail addresses for distributing notices and documents for public review, where possible.

Relicensing Participants are a subset of interested parties. Relicensing Participants are the individuals and entities that are actively participating in a proceeding. Any interested party may elect to be a licensing participant. Licensing participants generally are active on committees or specific aspects of the licensing and receive additional communications relative to the specific activity or function.

After the Licensee files the License Application, the FERC will establish an official Service List for parties who formally intervene in the proceeding. Intervention is a formal legal process described in the FERC regulations. Additional information may be found on FERC's website at

http://www.ferc.gov/help/how-to/intervene.asp. Once the FERC establishes a Service List, any written documents filed with FERC must also be sent to the Service List.

3.4.2 DOCUMENT DISTRIBUTION

The Licensee will distribute, whenever possible, documents electronically in standard Microsoft Word or PDF format. The Licensee may distribute hard copies of some documents for convenience or by request. Distribution of information will follow the guidelines presented below (Table 3-1).

TABLE 3-1 DOCUMENT DISTRIBUTION FOR THE RELICENSING OF THE GORHAM PROJECT (FERC NO. 2288)

DOCUMENT	METHOD	DISTRIBUTION
Public Meeting Notice	Initial meetings by newspapers and either email or U.S. Mail. Thereafter, by email, website and/or newspaper	Public and all potential interested parties
Meeting Agendas	Email or U.S. Mail*	Interested parties
Meeting Summaries	Email or U.S. Mail*	On Request
Major Documents: PAD; FERC Scoping Documents; Proposed Study Plans; Study Reports; Draft License Application; etc.	Email or U.S. Mail*, available in Public Reference File	Notice of availability by Email or U.S. Mail to interested parties
PAD supporting documents	Public Reference File	On Request
FERC License and related documents	Email or U.S. Mail*	On Request
Written Communications	Email or U.S. Mail*	On Request

**U.S. Mail service by special request.*

3.4.3 PUBLIC REFERENCE FILE

The Licensee will maintain copies of all mailing lists, announcements, notices, communications, and other documents related to the relicensing of the Project on a public website located at www.smithgorhamrelicensings.com. The Licensee will regularly update the public files to ensure the public has the latest information related to the relicensing process available to them and that all public documents are available.

Electronic copies will be available for most documents free of charge. For a nominal copying fee, hard copies of all documents are available upon request. Documents are available for inspection and reproduction during regular office business hours. Appointments are appreciated.

Anyone may set up an appointment to view the files or request copies of specific documents by contacting Curt Mooney at 603-744-0846 or cmooney@centralriverspower.com.

In addition, public documents will be filed with the FERC. These materials will be available on the FERC website (www.ferc.gov) at the eLibrary link and can be searched for by the FERC project docket number (P-2288 for the Gorham Project). In addition, all materials in the public reference files will be available for review and copying at the FERC offices in Washington, DC:

Federal Energy Regulatory Commission
Public Reference Room, Room 2-A
Attn: Secretary
888 First Street, N.E.
Washington, D.C. 20426

All communications added to the Public Reference File will be available to the public.

3.4.4 RESTRICTED DOCUMENTS

Certain project-related documents are restricted from public viewing in accordance with FERC regulations. Critical Energy Infrastructure Information (CEII) (defined under 18 CFR §388.113) are materials related to the design and safety of dams and appurtenant facilities and that, as necessary to protect national security and public safety, are restricted. Anyone seeking CEII information from FERC must file a CEII request. FERC's website at http://www.ferc.gov/help/how-to/file-ceii.asp contains additional CEII details.

Information related to protecting sensitive archaeological or other culturally important information is also restricted under Section 106 of the National Historic Preservation Act (NHPA)[5] as amended and its implementing regulations (36 CFR 800). In addition, information related to threatened and endangered species are protected under Section 7 of the Endangered

[5] Section 106 of the NHPA of 1966, as amended, 54 U.S.C. § 306108, Pub. L. No. 113-287, 128 Stat. 3188 (2014). The NHPA was recodified in Title 54 in December 2014.

Species Act (ESA). Anyone seeking this information from FERC must file a FOIA request. Instructions for FOIA are available on FERC's website at www.ferc.gov/legal/ceii-foia/foia.asp.

3.4.5 PROVIDING DOCUMENTS TO LICENSEE

The Licensee prefers to receive all documents electronically in either PDF or an appropriate Microsoft Office format. E-mail electronic documents to cmooney@centralriverspower.com. Hardcopy documents may be mailed to Curt Mooney, Central Rivers Power, at 59 Ayers Island Road Bristol, NH 03222. In either case, all documents received become part of the consultation record for the licensing and are available for distribution to the public.

3.4.6 STUDY REQUESTS

In the development of the PAD, the Licensee has collected and summarized the reasonably available information regarding the Project and its effects on the human and natural environments. The PAD, however, also indicates areas where there is limited or no information related to areas of potential concern with respect to the operation of the Project. In those cases, licensing participants may request additional studies or investigations to add to the knowledge of the Project. As specified by 18 CFR § 5.9(b), requested studies should:

- Describe the goals and objectives of each study proposal and the information to be obtained;
- If applicable, explain the relevant resource management goals of the agencies or Indian tribes with jurisdiction over the resource to be studied;
- If the requestor is not a resource agency, explain any relevant public interest considerations in regard to the proposed study;
- Describe existing information concerning the subject of the study proposal, and the need for additional information;
- Explain any nexus between project operations and effects (direct, indirect, and/or cumulative) on the resource to be studied, and how the study results would inform the development of license requirements;
- Explain how any proposed study methodology (including any preferred data collection and analysis techniques, or objectively quantified information, and a schedule including appropriate filed season(s) and the duration) is consistent with generally accepted practice in the scientific community or, as appropriate, considers relevant tribal values and knowledge; and
- Describe considerations of level of effort and cost, as applicable, and why any proposed alternative studies would not be sufficient to meet the stated information needs.

The requestor should also describe any available cost-share funds or in-kind services that the sponsor of the request may contribute towards the study effort.

Study requests may be filed electronically with the FERC at www.ferc.gov citing the FERC Docket No. 2288. In addition, study requests in Microsoft Word or PDF format should be sent electronically to cmooney@centralriverspower.com or in hardcopy to Curt Mooney, Central Rivers Power, at 59 Ayers Island Road Bristol, NH 03222.

3.5 REFERENCES

Federal Energy Regulatory Commission (FERC). 2004. Handbook for Hydroelectric Project Licensing and 5 MW Exemptions from Licensing. [Online] URL: http://www.ferc.gov/industries/hydropower/gen-info/handbooks/licensing_handbook.pdf. Accessed April 9, 2018.

4.0 DESCRIPTION OF PROJECT LOCATION, FACILITIES, AND OPERATION

4.1 PROJECT LOCATION

The Gorham Hydroelectric Project (Project) is located in northern New Hampshire within the City of Gorham, Coos County. The Gorham Project is one of seven hydroelectric projects within an 11-mile reach of the Androscoggin River between Berlin and Shelburne, New Hampshire (FERC 1993). There are five hydroelectric projects within 8-river-miles upstream of the Gorham Project; the Shelburne Project is approximately 2.8-river-miles downstream of the Gorham Project.

4.2 PROJECT BOUNDARY

The Project boundary generally includes the reservoir, dam, powerhouse, and tailrace. The Project boundary also extends from the dam downstream approximately 2,070 feet and upstream approximately 4,700 feet.

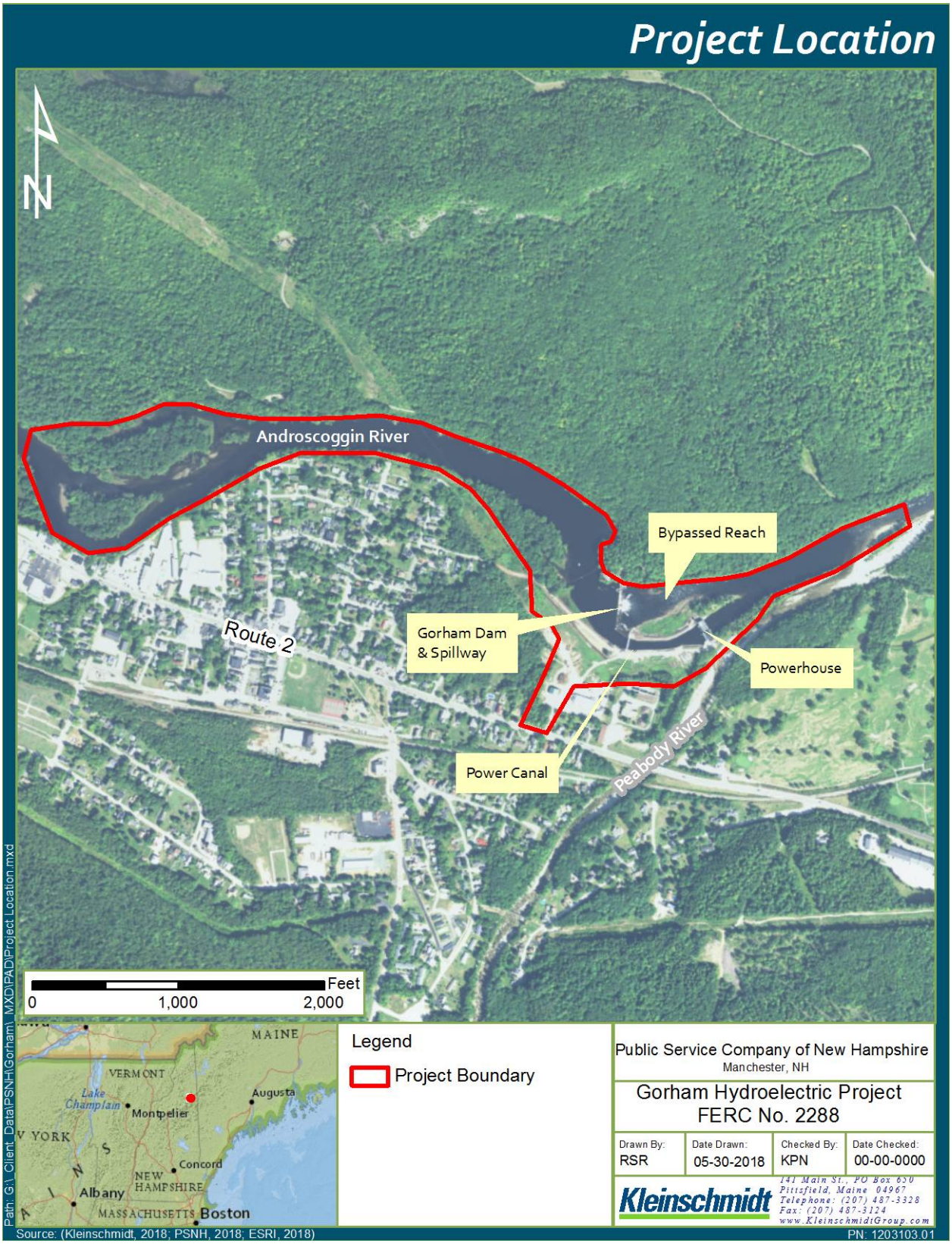


FIGURE 4-1 PROJECT LOCATION

4.3 PROJECT FACILITIES

4.3.1 EXISTING FACILITIES

The single-development Project consists of the Gorham impoundment, dam, powerhouse, tailrace channel, transmission lines, transformers, and appurtenant facilities. Table 4-1 provides the specifications for the Project.

IMPOUNDMENT

The Project reservoir has a surface area of 32 acres, at water surface elevation of 773.53 feet (USGS).

DAM

The Project dam is a timber crib, L-shaped dam, 417 feet long and about 20 feet high, with three sections: (1) a 90-foot-long spillway section, with a steel sheet pile facing, having a crest elevation of 772.23 feet (USGS), topped with a 12-inch by 12-inch wooden timber, (2) a 252-foot-long spillway section, with one layer of 3-inch wooden plank facing, having a crest elevation of 768.12 feet (USGS), topped with hinged wooden flashboards, about 5.4 feet high, and (3) a 75-foot-long reinforced-concrete sluiceway section, with a crest elevation of 768.20 feet (USGS), topped with 5.33-foot-high hinged wooden flashboards, having one 15-foot-wide sluice gate (Photo 4-1).

PHOTO 4-1 GORHAM DAM

POWER CANAL

The Project has an earthen power canal which is approximately 415-feet-long by 60-feet-wide by 20-feet-deep (Photo 4-2).

PHOTO 4-2 GORHAM POWER CANAL

POWERHOUSE

The powerhouse contains two 400-kW Allis-Chalmers generators (Photo 4-3) driven by two 583-horsepower (hp) S. Morgan Smith vertical, Francis-type turbines, and two 675-kW Allis-Chalmers generators driven by two 1,000-hp Allis-Chalmers vertical, propeller-type turbines, totaling a maximum hydraulic capacity of 2,800 cfs, at an operating head of approximately 18 feet.

PHOTO 4-3 VIEW OF POWERHOUSE INTERIOR AND GENERATING UNITS.

TRANSMISSION

The Project has a 33 kV, 200-foot-long transmission line, and appurtenant facilities. Appendix D contains the single-line diagram for the Project, which is being files as Critical Energy Infrastructure Information (CEII).

TABLE 4-1 GORHAM PROJECT FACILITIES AND DESCRIPTIONS

GORHAM PROJECT – FERC NO. 2288	
Description	Number or Fact
GENERAL INFORMATION	
FERC Number	P-2288
License Issued	August 1, 1994
License Expiration Date	July 31, 2024
Licensed Capacity	2,150 kW
Project Location	On Androscoggin River in Coos County, New Hampshire.
RESERVOIR AND DAM	
Surface Area of Reservoir	32 acres
Elevation Top of Dam	772.23 feet (spillway); 768.112 feet (spillway); 768.20 feet (sluiceway)
Height	20 feet

Length of Dam	417 feet
POWER CANAL	
Length	415 feet
Width	60 feet
Depth	20 feet
POWERHOUSE	
Length (Superstructure)	37.8
Width (Superstructure)	27.1
TURBINES/GENERATORS	
Number of units	4 units (2 S. Morgan Smith vertical Francis-type) (2 Allis-Chalmers vertical, propeller-type)
Rated Net Head	18 feet
Total Hydraulic Capacity	2,800
Average Annual Generation	10,524 MWh
TRANSMISSION LINES	
Type	33-kV
Length	200 feet

4.3.2 PROPOSED FACILITIES

No new facilities are proposed to be added to the Project at this time. Project drawings, Exhibit F and G are provided in Appendices G and H drawings.

4.4 PROJECT OPERATIONS

4.4.1 EXISTING OPERATION

The Project is operated as run-of-river with minimum impoundment fluctuations but under the run-of-river operating plan maintains a pond level of +/- 2 inches of the normal pond level setpoint. Article 402 of the existing license requires there be a minimum flow release of 200 cfs from the Gorham dam at all times. The minimum flow is released through a lowered flashboard near the middle of the dam.

The generating units are normally operated remotely from CRPNH's Control Center, managed by Customized Energy Solutions (CES) located in Philadelphia, Pennsylvania, although the units are also capable of local operation. Manual operations and maintenance of the Gorham Project are performed by the Upper Hydro Group, which is also responsible for CRPNH's J. Brodie

Smith Project (FERC No. 2287) and Canaan Project (FERC No. 7528) located in northern New Hampshire. Daily logs of pond level, flow, and outages are maintained electronically for the Project. Minimum bypass flows are assured by maintaining the headpond at a minimum elevation of 96.75 feet MSL, monitored at the licensee's dispatch center. Minimum flows are recorded on a computer.

PHOTO 4-4 VIEW OF MINIMUM FLOW GATE AT WEST END OF DAM.

4.4.2 PROPOSED OPERATION

No modifications to operations are proposed, either to the run-of-river mode or to the minimum bypass flows.

4.5 OTHER PROJECT INFORMATION

4.5.1 PROJECT GENERATION AND OUTFLOW RECORDS

Project generation for the past five years (2013-2018) averaged 10,727 MWH; the monthly and yearly MWH totals are as follows:

TABLE 4-2 MONTHLY AND YEARLY GENERATION (MWH) FOR THE GORHAM PROJECT

	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	TOTAL
2013	1,228	1,072	1,233	1,151	1,073	1,188	1,197	857	806	866	797	700	12,170
2014	1,106	1,204	1,154	917	1,190	1,103	1,215	1,099	681	743	943	907	12,262
2015	1,217	1,094	974	889	951	1,192	873	596	357	527	664	1,019	10,352
2016	1,299	1,174	1,256	1,246	1,222	465	592	242	522	141	-	231	8,390
2017	1,083	1,143	1,277	1,172	1,092	1,014	687	-	158	502	1,096	1,235	10,461
2018	1,238	1,159	1,210	1,257	1,107	648	852	951	922	1094	1214	1069	12,722
Average	1,195	1,141	1,184	1,105	1,106	992	913	559	505	556	700	818	10,727

River flow data for the Gorham Project was generated from USGS gage No. 01054000 (Androscoggin River near Gorham, New Hampshire) for the period January 1988 to December 2017; the USGS gage is approximately 4.5 river miles upstream of the Gorham Project. Data from the USGS gage were pro-rated by a factor of 1.03 to account for the additional drainage area at the Gorham Project.

Flow duration curves using data at the USGS gage No. 01054000 gage are provided in Appendix B.

TABLE 4-3 MEAN, MEDIAN, MINIMUM, AND MAXIMUM RIVER FLOWS BY MONTH FOR THE GORHAM PROJECT (JANUARY 1988 TO DECEMBER 2017).

MONTH	MEAN FLOW (CFS)	MEDIAN FLOW (CFS)	MINIMUM FLOW (CFS)	MAXIMUM FLOW (CFS)
January	2,591	2,576	1,285	6,478
February	2,704	2,653	1,306	7,146
March	3,057	2,828	1,296	14,601
April	4,702	3,671	1,306	20,461
May	4,055	3,131	1,419	16,657
June	2,998	2,319	1,193	13,161
July	2,330	1,902	971	10,591
August	2,070	1,851	1,141	10,282
September	1,957	1,861	802	10,004
October	2,449	1,984	1,049	15,423
November	2,688	2,267	1,172	10,282
December	2,600	2,385	1,193	10,066
Annual	**2,849**	**2,355**	**802**	**20,461**

4.5.2 DEPENDABLE CAPACITY

Due to the absence of useable storage associated with no impoundment fluctuation, the Project is entirely dependent upon available inflows for generation. The dependable capacity ratings as identified in the ISO New England 2019 Capacity, Energy, Loads, and Transmission (CELT) Report are 1.726 MW for the winter and 1.133 MW for the summer.

4.5.3 CURRENT NET INVESTMENT

The Project's current net investment value is $3,851,113.

4.5.4 DESCRIPTION OF CURRENT LICENSE REQUIREMENTS

FERC issued a license for the Gorham Project by order on August 1, 1994.

The license is for a period effective August 1, 1994 to July 31, 2024. Articles 1-28 are "standard articles" contained in FERC's Form L-3 included as part of the Order Issuing License. Articles 201 to 205 and 401 to 410 were also included in the Order Issuing License (FERC 1994). The following is a summary of Articles 201 to 205 and 401 to 410 (see Appendix E):

Article 201 requires the Licensee to pay the United States an annual charge, effective the first day of the month in which the license is issued.

Article 202 requires amortization reserves.

Article 203 requires headwater improvement reimbursement for headwaters benefits from another licensee.

Article 204 reserves authority by the Commission in the context of a rulemaking proceeding, a statement of policy, or a proceeding specific to the license to require the Licensee at any time to conduct studies, make financial provisions, or otherwise make reasonable provisions for decommissioning of the project.

Article 205 the Commission reserves authority, in the context of any licensing, relicensing, or license or exemption amendment proceeding involving the upstream Androscoggin River Basin projects.

Article 401 requires the Licensee to operate the project as run-of-river mode for the protection of fish and wildlife resources and water quality in the Androscoggin River.

Article 402 requires the Licensee to release a minimum flow of 200 cfs or inflow to the project reservoir, whichever is less, for the protection and enhancement of fish and wildlife resources and water quality in the bypassed reach of the Androscoggin River.

Article 403 within six months from the effective date of the license, the Licensee shall file with the Commission for approval, a plan to monitor run-of-river operation and minimum flow of the project, as stipulated by articles 401 and 402, respectively, and to describe how flows will be

maintained below the project when the impoundment is refilled after any maintenance and/or repairs.

Article 404 gives the Commission the authority to require the licensee to construct, operate, and maintain, or provide for the construction, operation, and maintain of, such fishways as may be prescribed by the Secretary of the Interior.

Article 405 reserves the Commission authority to require the Licensee to file with the Commission for approval, a plan to monitor dissolved oxygen levels and temperature of the Androscoggin River upstream and downstream of the Project.

Article 406 requires the Licensee to file for Commission approval, functional design drawings of the trashrack and downstream fish bypass facility to reduce the entrainment of resident fish.

Article 407 requires the Licensee to implement the provision of the Programmatic Agreement.

Article 408 requires the Licensee to develop and file, for Commission approval, a shore land protection plan.

Article 409 requires the Licensee to develop and file, for Commission approval, a recreation plan to provide additional public access.

Article 410 gives the Licensee authority to grant permission for certain types of use and occupancy of the project lands and waters and to convey certain interests in project lands and waters for certain types of use and occupancy, without prior Commission approval.

4.5.5 SUMMARY OF COMPLIANCE HISTORY OF THE PROJECT

The Licensee has followed existing license requirements and submitted statements and records indicating adherence to both the license articles and also the CFR to the FERC.

4.5.6 SAFETY PROCEDURES

The Gorham Project is remotely monitored and operated 24 hours a day, 7 days a week. In addition, plant staff visit the site daily (Monday – Friday). A telephone paging system notifies project personnel of operational problems via cellular telephones. Plant staff are generally within 30 minutes of the Project at all times. Gorham is classified as a low hazard dam. Due to the low

hazard classification of this dam, no Potential Failure Mode Analysis has been conducted at this site and therefore no Potential Failure Modes have been identified. Section 10(c) of the Federal Power Act (FPA) authorizes FERC to establish regulations requiring licensees to operate and properly maintain their Projects for the protection of life, health, and property. FERC Part 12 regulations include such safety measures as signage and exclusion devices. Dam Safety and Surveillance Monitoring Reports are filed with FERC on an annual basis.

CRP was required by FERC to file a public safety plan for the Project, which depicts the public safety devices installed at the Project and their location. The Commission approved the Public Safety Plan on August 1, 1994 and July 17, 2006. CRP maintains fences, handrails, a locked entrance gate and warning signs to protect the public from the hazards of project operations. CRP also seasonally installs a boat barrier before Memorial Day Weekend and removes the barrier after Columbus Day annually. According to the most recent FERC Environmental Inspection Report (issued June 6, 2006).

Following photographs provide reference to Part 12 public safety items.

PHOTO 4-5 VIEW OF BOAT BARRIER

PHOTO 4-6 VIEW OF TYPICAL PERMANENT UPSTREAM WARNING SIGN IN RESERVOIR. NOTE BARRIER ON OPPOSITE SHORELINE.

PHOTO 4-7 VIEW OF CANOE PORTAGE TRAIL AND SIGN.

PHOTO 4-8 PARKING AREA AND PICNIC TABLE AT POWERHOUSE AREA. NOTE CANOE PORTAGE SIGN.

PHOTO 4-9 CANOE PUT-IN LOCATION. NOTE SIGN.

PHOTO 4-10 INFORMATION AND SURVEY KIOSK AT MAIN PROJECT ENTRANCE.

PHOTO 4-11 PART 8 SIGN AT THE ENTRANCE TO PROJECT. NOTE SIGN FOR TOWN PUBLIC WORKS GARAGE.

5.0 DESCRIPTION OF EXISTING ENVIRONMENT AND RESOURCE IMPACTS

5.1 GENERAL DESCRIPTION OF THE RIVER BASIN

The Androscoggin watershed begins in northwestern Maine at Umbagog Lake, journeys through New Hampshire, then re-enters Maine near Bethel, eventually joining the Kennebec at Merrymeeting Bay. The Androscoggin River has a 1000-foot drop from its headwaters to the sea, the Androscoggin has an average descent of 8 feet per mile - a swift flowing, large volume river provides an excellent power source (Maine Rivers 2018).

The watershed has a total drainage area of 3,450-square-miles (720-square-miles in New Hampshire) (Maine Rivers 2018). The Androscoggin River watershed can be broken down into two sections, the upper and lower Androscoggin River Watersheds. The Project is located within the upper watershed located approximately 9-miles-upstream from the boarder of Maine.

5.2 MAJOR LAND USES

The area to the north of the project is primarily forest with pockets of shrub/scrub and agricultural land; the area is zoned for timber and agriculture. The land bordering the southern edge of the project boundary is developed and zoned for residential and commercial uses.

5.3 MAJOR WATER USES

The Androscoggin River near the Gorham Project is used for hydropower generation, recreation, flood control, and wastewater assimilation. The Gorham Project is one of seven hydroelectric projects within an 11-mile reach of the Androscoggin River between Berlin and Shelburne, New Hampshire (FERC 1993). There are five hydroelectric projects within 8-river-miles upstream of the Gorham Project; the Shelburne Project is approximately 2.8-river-miles downstream of the Gorham Project (Figure 5-1).

The Gorham water treatment facility discharges to the Androscoggin River approximately 500 feet downstream of the powerhouse (PSNH 1998). There are no current or proposed water withdrawals or consumptive uses of water at the Gorham Project.

TABLE 5-1 UPPER ANDROSCOGGIN RIVER BASIN HYDROELECTRIC PROJECTS (LISTED FROM UPSTREAM TO DOWNSTREAM

PROJECTS	PROJECT NUMBERS
Sawmill	2422
J. Brodie Smith	2287
Cross Power	2326
Cascade	2327
Gorham	2311
Gorham	2288
Shelburne	2300

5.4 PROJECT RESERVOIR AND STORAGE

The Gorham Project has a 32-acre-reservoir at a water surface elevation of 773.53 feet (FERC 1994). The impoundment extends upstream approximately 4,700 feet from the dam. The water depth in the impoundment is approximately 10 to 15 feet (FEMA 2013).

5.5 PROJECT DRAINAGE BASIN'S TRIBUTARY STREAMS

Principal tributaries to the Androscoggin River include: Dead River, which joins the Androscoggin River in Berlin, New Hampshire; the Moose River, which enters the Androscoggin River approximately 1.3-river-miles upstream of the Gorham Project; and the Peabody River, which enters the Androscoggin River approximately 1,000 feet downstream of the Gorham powerhouse.

5.6 CLIMATE

The Project region experiences mild, relatively humid summers and cold winters with moderate snowfall in the lower elevations. Average July air temperatures in the Project vicinity range from a daily average maximum of 78°F to a daily average minimum of 55°F. The daily average maximum air temperature for January is approximately 26°F while the daily average minimum air temperature for January is 5°F. The average annual total precipitation is 41.57 inches with an average annual snowfall of 78 inches (US Climate Data, 2018).

5.7 REFERENCES

Federal Emergency Management Agency (FEMA). 2013. Flood Insurance Study. Coos County, New Hampshire. Volume 1 of 2. February 20, 2013.

Federal Energy Regulatory Commission (FERC). 1993. Final Environmental Impact Statement. Upper Androscoggin River Basin Hydroelectric Projects (FERC 2422-004, 2287-003, 2326-002, 2327-002, 2311-001, 2288-004, 2300-002). November 1993.

Maine Rivers. 2018. Androscoggin Watershed. [Online] https://mainerivers.org/androscoggin.htm. Accessed August 3, 2018.

Public Service Company of New Hampshire (PSNH). 1998. 1994, 1995, & 1997 Final Report of Water Quality Monitoring for Gorham Project, FERC L.P. No. 2288.

U.S. Climate Data. 2018. Climate Data, Berlin, Maine. [Online] https://www.usclimatedata.com/climate/berlin/new-hampshire/united-states/usnh0020. Accessed August 3, 2018.

5.8 GEOLOGY AND SOILS

5.8.1 OVERVIEW

New Hampshire is located in the New England physiographic province. This province is mountainous and contains highly deformed metamorphic rocks from the Precambrian and Paleozoic eras; the Project area is in the part of the province made up of Paleozoic sedimentary and metasedimentary rocks (NPS 2018).

The majority of the Project boundary occurs in the Littleton Formation, which is part of the Central Maine Composite Terrane and consists of sedimentary and volcanic rocks. It is the most widespread geologic formation in New Hampshire and it extends from Massachusetts to Maine in a north-northeasterly direction. The primary rock type in this geological unit is metasedimentary rock, and the secondary rock type is metavolcanic rock. This geologic unit is fossiliferous in the western part of New Hampshire; the Project occurs in the eastern part of the state, making it less likely for fossils to be found there (Billings 1980; USGS 2018).

The lithology of the Littleton Formation is particularly complex. The formation was originally composed primarily of argillaceous and arenaceous sediments but also contained beds of other rocks, including volcanics, quartzites, and impure dolomites. The formation possesses a large range in grade of metamorphism. Even locally within the formation there is wide variation between metamorphosed sedimentary rocks and plutonic rocks (Billings 1980).

A small eastern portion of the Project boundary is in a unit characterized by the two-mica granite of northern and southeastern New Hampshire. This is part of the New Hampshire Plutonic Suite and includes synkinematic and postkinematic granitoids related to the Acadian orogeny (USGS 2018).

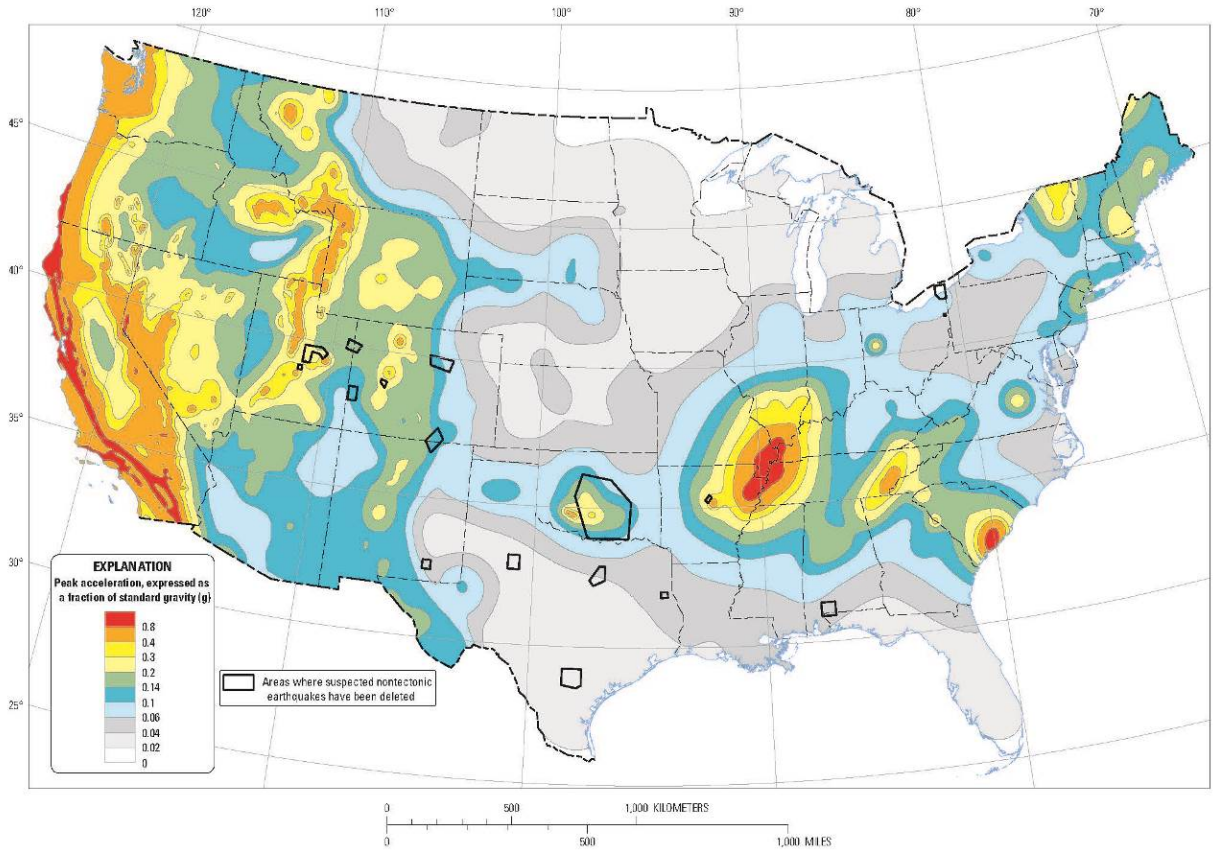
5.8.2 SEISMIC ACTIVITY

The U.S. Geological Survey (USGS) National Seismic Hazard Maps display earthquake ground motions for various probability levels across the United States and are applied in seismic provisions of building codes, insurance rate structures, risk assessments, and other public policy.

The maps are derived from seismic hazard curves calculated on a grid of sites across the United States that describe the frequency of exceeding a set of ground motions (USGS 2018c). The map

in Figure 5-1 shows in the levels of shaking that have a 2-in-100 chance of being exceeded in a 50-year period.

The Project location is located in an area considered the mid-level tier of hazard out of ten tiers (USGS 2018b).



Two-percent probability of exceedance in 50 years map of peak ground acceleration

FIGURE 5-1 LONG TERM SEISMICITY MODEL 50 YEAR MAP OF PEAK GROUND ACCELERATION

5.8.3 SOILS

The soil in the Project area is generally loamy (Figure 5-2). The most commonly found soils in the Project area are Sheepscot cobbly very fine sandy loam (15 percent), Monadnock fine sandy loam (11 percent), Abenaki very fine sandy loam (10 percent), and Colton gravelly fine sandy loam (8 percent) (USDA 2018) (Table 5-2, Figure 5-2).

TABLE 5-2 SOIL TYPES IN AND 1,000 FEET AROUND THE GORHAM PROJECT BOUNDARY.

MAP UNIT NAME	SOIL TYPE	AREA (ACRES)	PERCENT (%)
102A	Sunday loamy fine sand, 0 to 3 percent slopes	25	5%
143C	Monadnock fine sandy loam, 8 to 15 percent slopes	19	4%
143D	Monadnock fine sandy loam, 15 to 25 percent slopes	11	2%
143E	Monadnock fine sandy loam, 25 to 50 percent slopes	23	5%
145C	Monadnock fine sandy loam, 0 to 15 percent slopes	2	0%
14B	Sheepscot cobbly very fine sandy loam, 1 to 8 percent slopes	75	15%
169C	Sunapee fine sandy loam, 8 to 15 percent slopes	6	1%
208A	Fryeburg very fine sandy loam, 0 to 3 percent slopes	19	4%
22A	Colton gravelly fine sandy loam, 0 to 3 percent slopes	18	4%
22B	Colton gravelly fine sandy loam, 3 to 8 percent slopes	10	2%
22C	Colton gravelly fine sandy loam, 8 to 15 percent slopes	6	1%
22E	Colton gravelly fine sandy loam, 15 to 60 percent slopes	8	2%
273E	Berkshire, Monadnock	15	3%
28B	Madawaska very fine sandy loam, 3 to 8 percent slopes	4	1%
307A	Lovewell very fine sandy loam, 0 to 3 percent slopes	1	0.2%
433A	Grange silt loam, 0 to 5 percent slopes	20	4%
501A	Abenaki very fine sandy loam, 0 to 3 percent slopes	49	10%
504A	Metallak very fine sandy loam, 0 to 3 percent slopes	30	6%
505A	Cohas loam, 0 to 2 percent slopes	17	3%
55C	Hermon sandy loam, 8 to 15 percent slopes	14	3%
59C	Waumbek sandy loam, 8 to 15 percent slopes	24	5%
59D	Waumbek sandy loam, 15 to 25 percent slopes	10	2%
61C	Tunbridge-Lyman-Rock outcrop complex, 8 to 15 percent slopes	5	1%
61D	Tunbridge-Lyman-Rock outcrop complex, 15 to 25 percent slopes	6	1%
61E	Tunbridge-Lyman-Rock outcrop complex, 25 to 60 percent slopes	9	2%
670C	Tunbridge-Berkshire-Lyman complex, 8 to 15 percent slopes	7	1%
W	Water	72	14%
	Total	506	

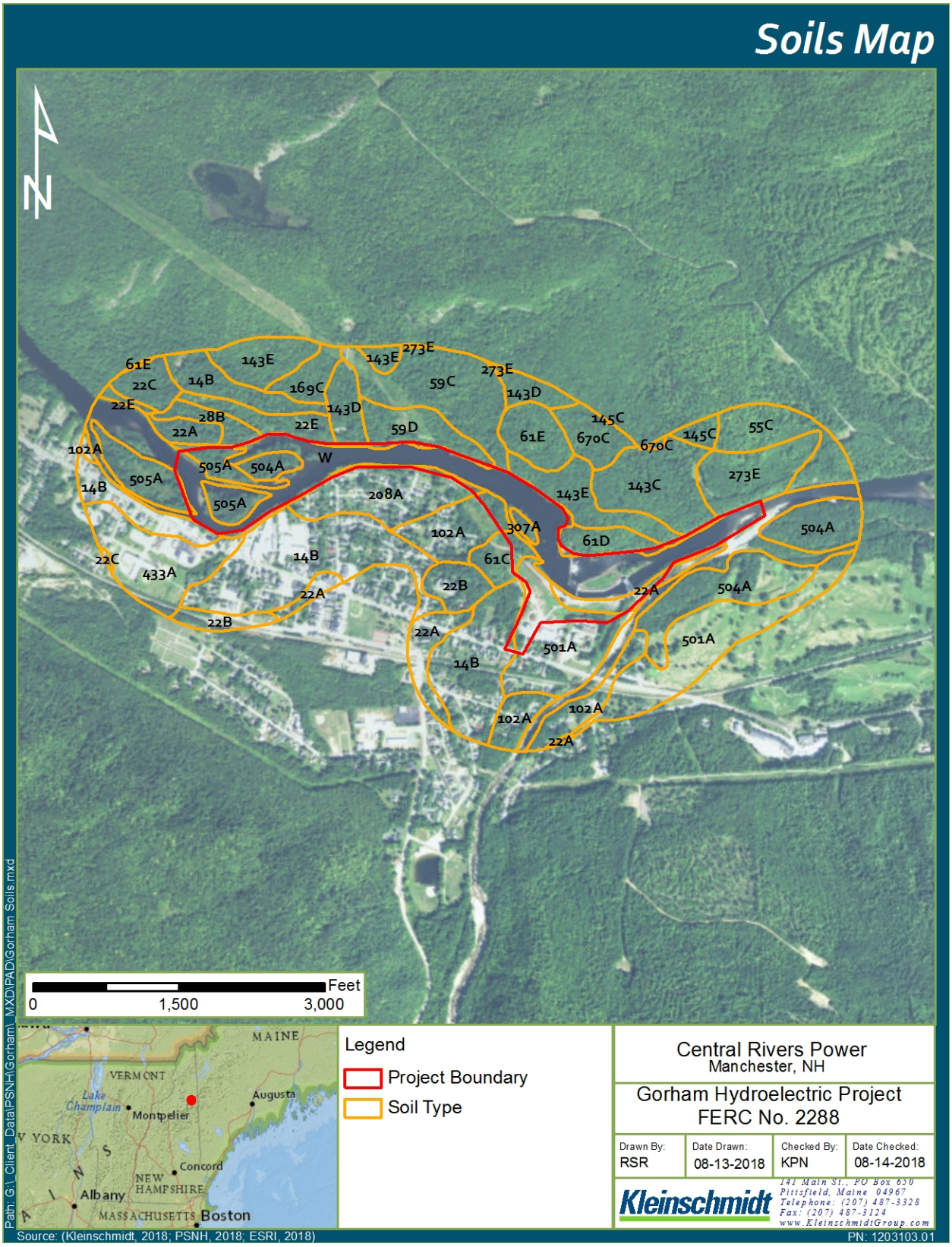


FIGURE 5-2 GORHAM SOILS

5.8.4 RESERVOIR SHORELINE AND STREAM BANKS

The major soil types along the northern shoreline of the Gorham project boundary are Monadnock fine sandy loam, Sheepscot cobbly very fine sandy loam, Colton gravelly fine sandy loam, Berkshire/Monadnock, Madawaska very fine sandy loam, Hermon sandy loam, Waumbek sandy loam, and Tunbridge-Lyman-Rock outcrop complex (Table 5-2, Figure 5-2). These soils range from being moderately well drained to excessively drained.

The southern shoreline along the project boundary consists of Sunday loamy fine sand, Sheepscot cobbly very fine sandy loam, Fryeburg very fine sandy loam, Colton gravelly fine sandy loam, Grange silt loam, Abenaki very fine sandy loam, and Tunbridge-Lyman-Rock outcrop complex (Table 5-2, Figure 5-2). These soils range from being poorly drained to excessively drained.

Article 408 of the project license requires the licensee to file a shoreland protection plan to protect the aesthetics of and public access to the project's shoreland. The article requires the plan to include maps delineating the shoreland protective buffer zone area; a description of vegetative management; and measures for maintaining the aesthetics of the transmission line right-of-way. The article also requires the licensee to prepare the plan after consultation with the Town of Gotham, City of Berlin, New Hampshire Fish and Game Department (NHFGD), and the National Park Service (NPS).

On August 1, 1995, PSNH filed a Shoreland Protection Plan for the Gorham Project and supplemented the filling on September 22, 1998 by letter. FERC modified and approved the plan on April 19, 1999 (87 FERC ¶ 62,076).

The south shore of the Androscoggin River in Gorham is highly developed in contrast to the north shore which is mainly timber. The project reservoir has a normal elevation of 773.53 USGS Datum and the project boundary lies at contour elevation 773.6 USGS Datum. The licensee owns approximately 35 percent of the area within the project boundary and retains flowage easements for the rest of the area within the project boundary.

Due to the unlikelihood of the north shore property being bought and commercialized, a 150 feet buffer was not adopted in the plan. The Licensee files annually a shoreline inspection report for

the upstream and downstream shoreline areas of the Project boundary. To date, no changes have occurred nor violations to the Shoreland Protection Act have occurred.

5.8.5 EROSION

The majority of the shoreline within the Project boundary is forested, limiting the degree of potential erosion. Soils within the Project range from moderately low to moderate erodibility. There may be limited amounts of localized erosion, but if present, the extent of such shoreline erosion is unknown.

The Natural Resources Conservation Service has assessed the susceptibility of the soils surrounding the Project to erosion (i.e., the K Factor) caused by water including rainfall and stormwater run-off. K Factor estimates are based primarily on percentage of silt, sand, and organic matter and on soil structure and saturated hydraulic conductivity with values ranging from 0.02 to 0.69; larger values indicate greater susceptibility to sheet and rill erosion by water (USDA 2018). The K Factor values for the soils surrounding the Gorham Project range from 0.05 (Colton gravelly fine sandy loam) to 0.37 (Fryeburg very fine sandy loam, Grange silt loam, Abenaki very fine sandy loam, and Metallak very fine sandy loam) indicating a low to moderate susceptibility to erosion from water (USDA 2018).

5.8.6 REFERENCES

Billings, Marland P. (1980.) The geology of New Hampshire: Part II, bedrock geology. Concord, NH: Division of Forests and Lands, Department of Resources and Economic Development. Available at https://www.des.nh.gov/organization/commissioner/pip/publications/geologic/documents/geologyofnh2.pdf

National Park Service. "New England Province." Accessed from https://www.nps.gov/articles/newenglandprovince.htm

United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS). (2018.) "Custom Soil Resource Report for Coos County Area, New Hampshire." Accessed from https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm

USGS. 2018. "Littleton Formation, undivided." Accessed from https://mrdata.usgs.gov/geology/state/sgmc-unit.php?unit=NHDl%3B0

USGS. 2018a. Earthquake Hazards Program: Seismic Hazard Maps and Site-Specific Data. [Online] https://earthquake.usgs.gov/hazards/hazmaps/. Accessed June 20, 2018.

USGS. 2018b. United States – Lower 48. [Online] https://earthquake.usgs.gov/hazards/hazmaps/conterminous/index.php#2014. Accessed June 20, 2018.

USGS. 2018c. Earthquake Hazards 101 – the Basics. [Online] https://earthquake.usgs.gov/hazards/learn/basics.php. Accessed June 20, 2018.

5.9 WATER RESOURCES

5.9.1 DRAINAGE AREA

The Androscoggin River originates at Umbagog Lake near Errol, New Hampshire, approximately 42-river-miles upstream of the Gorham Project (Figure 5-3). The Androscoggin River flows south-southwest through northern New Hampshire and the towns of Berlin and Gorham before entering western Maine. The Androscoggin River has a drainage area of approximately 3,450-square-miles and a total length of 161 miles (FERC 1993). The Gorham Project is in the Peabody-Androscoggin HUC10 watershed (0104000201) within the larger Androscoggin River watershed (Figure 5-3). The drainage area at the Gorham Project is approximately 1,402-square-miles. Major tributaries to the Androscoggin River in the Project area include the Dead River, which joins the Androscoggin River in Berlin, New Hampshire; the Moose River, which enters the Androscoggin River approximately 1.3-river-miles upstream of the Gorham Project; and the Peabody River, which enters the Androscoggin River approximately 1,000 feet downstream of the Gorham powerhouse (Figure 5-3).

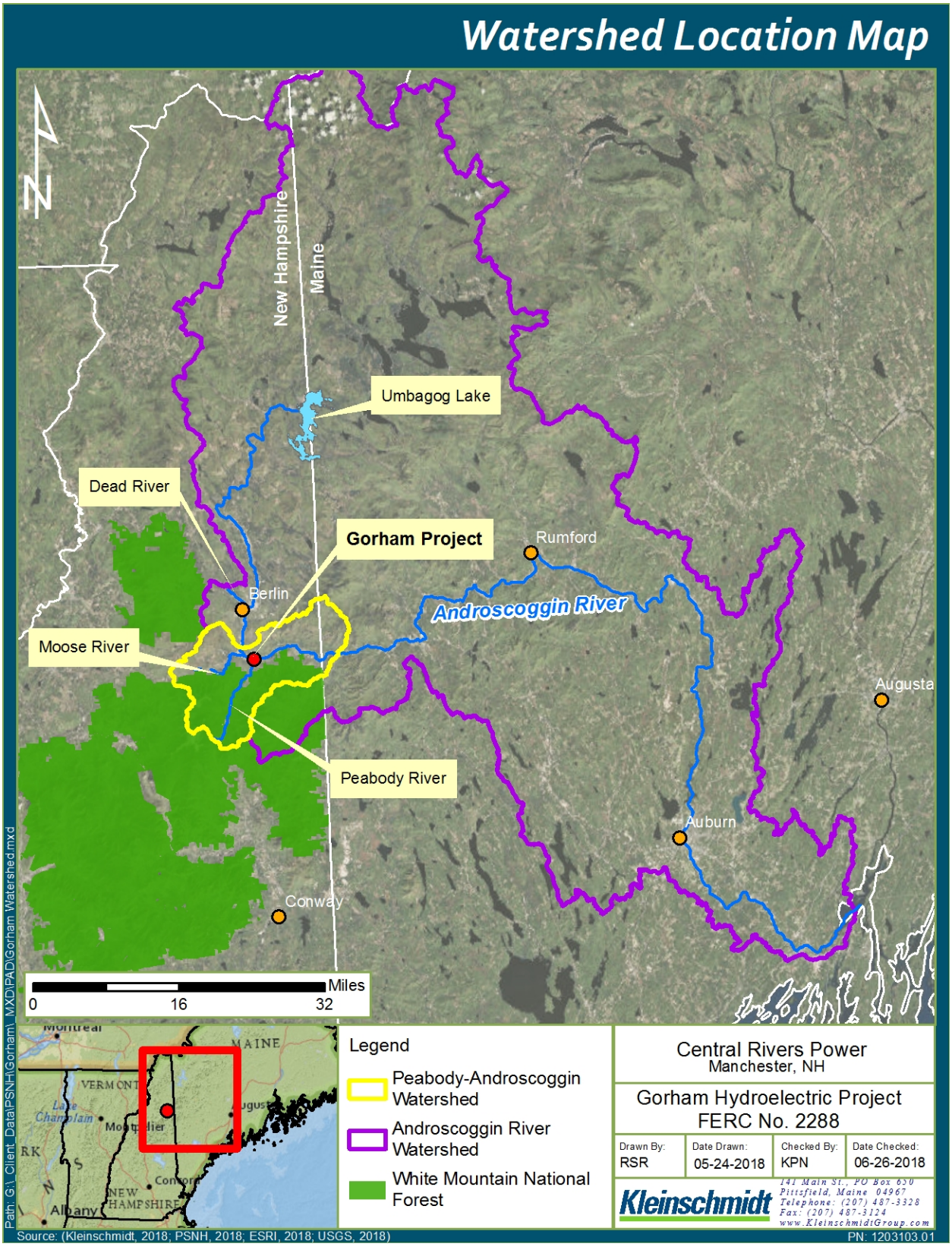


FIGURE 5-3 LOCATION OF THE GORHAM HYDROELECTRIC PROJECT WITHIN THE ANDROSCOGGIN RIVER WATERSHED.

5.9.2 STREAM FLOW STATISTICS

River flow data for the Gorham Project was generated from USGS gage No. 01054000 (Androscoggin River near Gorham, New Hampshire) for the period January 1988 to December 2017; the USGS gage is approximately 4.5 river miles upstream of the Gorham Project. Data from the USGS gage were pro-rated by a factor of 1.03 to account for the additional drainage area at the Gorham Project.

The mean, median, minimum, and maximum annual river flows of the Androscoggin River at the Gorham Project are estimated to be 2,849 cfs; 2,355 cfs; 802 cfs; and 20,461 cfs, respectively (Table 5-3). The maximum monthly average flow typically occurs in April, and the minimum monthly average flow is typically in September (Table 5-3). The peak flow (20,461 cfs) occurred on April 1, 1998, and the minimum flow (802 cfs) occurred September 4, 2015. Annual and monthly flow duration curves for the Gorham Project are presented in Appendix B.

TABLE 5-3 MEAN, MEDIAN, MINIMUM, AND MAXIMUM RIVER FLOWS BY MONTH FOR THE GORHAM PROJECT (JANUARY 1988 TO DECEMBER 2017).

MONTH	MEAN FLOW (CFS)	MEDIAN FLOW (CFS)	MINIMUM FLOW (CFS)	MAXIMUM FLOW (CFS)
January	2,591	2,576	1,285	6,478
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November	2,688	2,267	1,172	10,282
December	2,600	2,385	1,193	10,066
Annual	**2,849**	**2,355**	**802**	**20,461**

5.9.3 EXISTING AND PROPOSED USES OF WATER

The Androscoggin River near the Gorham Project is used for hydropower generation, recreation, flood control, and wastewater assimilation. The Gorham Project is one of seven hydroelectric projects within an 11-mile reach of the Androscoggin River between Berlin and Shelburne, New

Hampshire (FERC 1993). There are five hydroelectric projects within 8-river-miles upstream of the Gorham Project; the Shelburne Project is approximately 2.8-river-miles downstream of the Gorham Project.

The Gorham water treatment facility discharges to the Androscoggin River approximately 500 feet downstream of the powerhouse (PSNH 1998). There are no current or proposed water withdrawals or consumptive uses of water at the Gorham Project.

CRP provides recreational access to the Androscoggin River within the project boundary including a canoe portage, a fishing area, and information kiosks. Additional information about recreation opportunities at the Gorham Project is provided in Section 5.14 Recreation and Land Use.

5.9.4 EXISTING INSTREAM FLOW USES

CRP operates the Gorham Project in run-of-river mode where outflow from the powerhouse is approximately equal to inflow. Run-of-river operations minimize water level fluctuations in the impoundment; protect water quality, fishery, wildlife, and visual resources; and provide stable river flows downstream. Operation of the Gorham Project results in the diversion of water from an approximately 850-foot-long bypassed reach. CRP provides a minimum flow of 200 cfs or inflow, whichever is less, into the bypassed reach for the protection of water quality and fish and wildlife resources (FERC 1994). This minimum flow was based on results from an IFIM study which found that 200 cfs optimized habitat for the studied fish species (e.g., fallfish, brook trout, and rainbow trout) (FERC 1993).

5.9.5 EXISTING WATER RIGHTS

CRP holds all the flowage easements necessary to operate the Gorham Project. There is no development within the project boundary and no private property is affected by operations.

5.9.6 RESERVOIR INFORMATION

The Gorham Project has a 32-acre-reservoir at a water surface elevation of 773.53 feet (FERC 1994). The impoundment extends upstream approximately 4,700 feet from the dam. The water depth in the impoundment is approximately 10 to 15 feet (FEMA 2013).

5.9.7 GRADIENT DOWNSTREAM REACHES

The elevation of the Androscoggin River at the base of the Gorham dam is approximately 758 feet, and the elevation at the Shelburne dam is approximately 700 feet (FEMA 2013). Therefore, the river is low gradient, dropping 58 feet over approximately 3 miles between the Gorham and Shelburne dams (58 feet/15,200 feet=0.004 or 0.4 percent).

5.9.8 WATER QUALITY STANDARDS

The Androscoggin River in the Gorham Project area is classified by the state of New Hampshire as Class B; this is the second highest water quality classification in New Hampshire (NHS 1989). Class B waters are "*considered acceptable for fishing, swimming and other recreational purposes, and, after adequate treatment, for use as water supplies."* All surface waters shall be free from substances that: settle to form harmful benthic deposits; float as foam, debris, scum or other visible substances; produce odor, color, taste or turbidity that is not naturally occurring and would render the surface water unsuitable for its designated uses; result in the dominance of nuisance species; or interfere with recreational activities (NHDES 2008). Water quality criteria are provided in Table 5-4. The Androscoggin River in the Gorham Project area is not listed as impaired on the 303(d) list for the state of New Hampshire (NHDES 2017a).

TABLE 5-4 WATER QUALITY CRITERIA FOR CLASS B WATERS IN NEW HAMPSHIRE.*

PARAMETER	CRITERIA
DO	At least 75% saturation, based on a daily average; instantaneous minimum of 5 mg/L
Color	No concentrations that would impair any existing or designated use, unless naturally occurring
Turbidity	Shall not exceed naturally occurring conditions by more than 10 NTU
Nutrients	Shall contain no phosphorus or nitrogen in such concentrations that would impair any existing or designated uses, unless naturally occurring.
pH	6.5 to 8.0
Temperature	Any stream temperature increase associated with the discharge of treated sewage, waste or cooling water, water diversions, or releases shall not be such as to appreciably interfere with the uses assigned to this class.

*NHDES 2008

5.9.9 BASELINE WATER QUALITY

Water quality was monitored at 26 sites in the Androscoggin River between Berlin, New Hampshire, and Gilead, Maine, from August 4-6, 1987, under low flow, high water temperature conditions (NAI 1989). One of the sites was in the Gorham Project headpond and was sampled once each day; a continuous logger recorded DO data in the tailrace over the three-day period. DO in the impoundment was 8.1 mg/L, 7.9 mg/L, and 7.8 mg/L on August 4, 5, and 6, respectively (Table 5-5). In the tailrace, DO ranged from approximately 7.3 mg/L to 8.2 mg/L with a mean of 7.5 mg/L; the water temperature ranged from 69ºF to 73ºF. At the time of the study, the Androscoggin River in the Gorham Project area was classified as Class C (it was reclassified to Class B in 1991); there were no violations of Class B or Class C water quality standards in the Gorham headpond or tailrace (NAI 1989).

TABLE 5-5 WATER QUALITY DATA COLLECTED AUGUST 4-6, 1987, IN THE GORHAM PROJECT HEADPOND.

DATE	DO (MG/L)	TOTAL KJELDAHL NITROGEN (MG/L)	AMMONIA (MG/L)	TOTAL PHOSPHORUS (MG/L)	CHLOROPHYLL-A (µG/L)	WATER TEMPERATURE (ºF)	PH
August 4	8.1	0.77	0.11	0.05	2.33	73.4	6.7
August 5	7.9	0.84	0.16	0.01	1.24	70.7	
August 6	7.8	1.10	0.08	0.07	0.66	69.8	

PSNH continuously monitored DO and water temperature over 72-hour periods at two sites at the Gorham Project in 1994, 1995, and 1997 (PSNH 1998). One site was approximately 500-feet-upstream of the dam in the headpond, and the second site was in the tailrace approximately 200-feet-downstream of the powerhouse. The objective of the monitoring was to assess if station generation impacted DO and water temperature conditions at the project. The DO percent saturation ranged from 64.6 percent to 100.7 percent in the headpond and from 65.3 percent to 100.2 percent in the tailrace (Table 5-6). A relationship between DO and generation was not observed in the headpond or tailrace (PSNH 1998).

TABLE 5-6 DO (PERCENT SATURATION) MEASURED IN THE GORHAM PROJECT HEADPOND AND TAILRACE

DATE	HEADPOND	TAILRACE
August 9-12, 1994	87.5-99.8	74.4-92.3
September 2-5, 1994	64.6-87.8	65.7-88.0
August 4-7, 1995	66.1-83.4	68.2-86.1
August 25-28, 1995	74.4-90.3	65.3-86.9
October 4-7, 1995	80.7-95.5	82.9-96.6
July 18-21, 1997	84.7-100.7	90.2-100.2
August 15-18, 1997	no data-issues with instrument	82.4-97.4
September 5-8, 1997	81.0-94.4	83.4-93.7

The New Hampshire Volunteer River Assessment Program (VRAP) monitors water quality at several sites in the Upper Androscoggin River (NHDES 2017b). None of the monitoring sites are within the Gorham project boundary, but one site is at the Gorham railroad trestle approximately 2-river-miles-upstream of the Gorham Project. Several water quality parameters are measured on multiple days (6 to 11) each year between May and October. The range of measurements observed each year monitoring occurred are shown in Table 5-7. The DO concentration and percent saturation met the state standard in all samples collected in 2004, 2013, 2014, 2015, 2016, and 2017 (Table 5-7) (NHDES 2017b). In 2011-2015 and 2017, pH measurements below the state standard were recorded.

TABLE 5-7 WATER QUALITY DATA COLLECTED AT THE RAILROAD TRESTLE IN GORHAM, NH, IN 2013 TO 2017, BY THE VOLUNTEER RIVER ASSESSMENT PROGRAM.*

DATE	DO (MG/L)	DO (% SATURATION)	WATER TEMPERATURE (°C)	pH	TURBIDITY (NTU)	SPECIFIC CONDUCTANCE (µS/CM)
May 10-October 28, 2017	8.2-12.3	90-102.2	7.3-20.2	5.9-6.9	0.64-2.0	26.2-35.0
June 30-October 22, 2016	7.8-9.9	89.7-94.1	13.2-22.5	6.8-7.1	0.8-1.3	34.2-37.6
June 26-October 18, 2015	7.5-10.5	78.9-96.0	8.3-21.6	6.3-6.9	0.7-2.3	26.6-34.8
June 15-October 18, 2014	7.2-9.5	79.4-91.2	13.7-21.9	6.1-6.6	0.8-1.5	27.5-34.3
June 22-October 26, 2013	6.5-10.9	72.3-102.5	6.3-22.9	6.1-6.6	0.9-2.7	34.0-38.6

DATE	DO (MG/L)	DO (% SATURATION)	WATER TEMPERATURE (°C)	PH	TURBIDITY (NTU)	SPECIFIC CONDUCTANCE (µS/CM)
June 7-October 7, 2012	3.3-9.2	38.4-96.2	12.0-22.6	6.1-6.6	0.9-2.2	34.7-51.2
June 6-October 25, 2011	4.2-6.8	46.1-71.3	10.3-20.2	6.1-6.5	1.3-2.4	29.9-37.7
June 11-September 3, 2004	8.1-8.8	89.7-92.2	17.9-21.1	6.6-7.1	1.6-2.1	54.4-89.0

*NHDES 2017

According to the monitoring site: Meadow Road Bridge in Shelburne, which is 5.83 miles downstream of the Project, in 2017 the pH dropped below the standard in May, June, and October.

TABLE 5-8 ANDROSCOGGIN RIVER, MEADOW ROAD BRIDGE, SHELBURNE

DATE	TIME OF SAMPLE	DO (MG/L)	DO (% SAT.)	PH	TURBIDITY (NTUS)	SPECIFIC CONDUCTANCE (MS/CM)	WATER TEMP/ (°C)
Standard	NA	>5.0	>75% Daily Average	6.5-8.0	<10 NTU above background	835 µS/cmA	NA
5/10/2017	9:30	12.32	104.8	6.35	1.76	25	7.7
6/23/2017	8:40	9.05	101.7	6.35	2.04	33.2	20
7/31/2017	8:20	9.22	104.4	6.67	1.68	31.2	20.8
8/21/2017	8:25	9.3	104.6	6.58	1.41	31.6	20.6
9/18/2017	8:37	9.41	103.6	6.64	1.67	34.1	19.6
10/24/2017	8:00	10.62	104.4	6.4	1.93	33.5	13.9

VRAP Data 2017

5.9.10 REFERENCES

Federal Emergency Management Agency (FEMA). 2013. Flood Insurance Study. Coos County, New Hampshire. Volume 1 of 2. February 20, 2013.

Federal Energy Regulatory Commission (FERC). 1993. Final Environmental Impact Statement. Upper Androscoggin River Basin Hydroelectric Projects (FERC 2422-004, 2287-003, 2326-002, 2327-002, 2311-001, 2288-004, 2300-002). November 1993.

Federal Energy Regulatory Commission (FERC). 1994. Order Issuing New License. Public Service Company of New Hampshire Gorham Project. Project No. 2288-004. Issued August 1, 1994.

Normandeau Associates Inc (NAI) 1989. Water Quality Modeling Study Androscoggin River Berlin, New Hampshire to Gilead, Maine. Prepared for James River Company Inc.

Application for New License for Major Project Existing Dam Gorham Project FERC No. 2311. December 1991.

New Hampshire Department of Environmental Services (NHDES). 2008. New Hampshire Code of Administrative Rules. Chapter Env-Wq 1700 Surface Water Quality Standards. https://www.des.nh.gov/organization/commissioner/legal/rules/documents/env-wq1700.pdf. Accessed May 21, 2018.

New Hampshire Department of Environmental Services (NHDES). 2017a. 2016 Section 303(d) Surface Water Quality List. R-WD-17-09. https://www.des.nh.gov/organization/divisions/water/wmb/swqa/2016/index.htm. Accessed May 21, 2018.

New Hampshire Department of Environmental Services (NHDES). 2017b. Volunteer River Assessment Program. Report, Data, and Maps. https://www.des.nh.gov/organization/divisions/water/wmb/vrap/androscoggin/index.htm. Accessed May 29, 2018.

New Hampshire Statutes (NHS). 1989. Chapter 485-A:8: Water Pollution and Waste Disposal, Standards for Classification of Surface Waters of the State. http://gencourt.state.nh.us/rsa/html/L/485-A/485-A-8.htm. Accessed May 21, 2018.

Public Service Company of New Hampshire (PSNH). 1998. 1994, 1995, & 1997 Final Report of Water Quality Monitoring for Gorham Project, FERC L.P. No. 2288.

5.10 FISH AND AQUATIC RESOURCES

The Gorham Project is in the upper Androscoggin watershed approximately 9-river-miles upstream of the Maine-New Hampshire border. The upper Androscoggin river watershed begins on the Canadian border as water runs through the Rangeley Lakes and flows into Lake Umbagog. The Androscoggin River begins on the Maine-New Hampshire border at Umbagog Lake and flows downstream to Merrymeeting Bay, Maine (Publicover, 2003). Prior to 1980, the upper reaches of the Androscoggin River were polluted due to point source discharges including paper mill and textile effluents (Boucher, 1997; Yoder, 2006). Water treatment facilities and pollutant discharge restrictions associated with the Clean Water Act of 1972 helped reduce pollution and improve water quality. Cleaner water has improved the fishery within the upper Androscoggin River and allowed it to remain an important recreational and ecological resource (Inglis et al., 2014).

Currently, the fishery in the upper Androscoggin River is a mix of naturally occurring and stocked species. The Appalachian Mountain Club (2003) reports that the upper Androscoggin River supports approximately 30 species of fish, with a quarter of those species being exotic (Publicover, 2003). Landlocked salmon (*Salmo salar),* rainbow trout (*Onchorhynchus mykiss),* brown trout (*Salmo trutta),* smallmouth bass (*Micropterus dolomieu),* and rainbow smelt (*Osmerus mordax)* are not native to the region but were introduced. Native species in parts of New Hampshire include lake trout (*Salvelinus namaycush),* yellow perch (*Perca falvescens)* and alewives (*Alosa pseudoharengus);* however, these species have been introduced upstream of the Rangeley Lake area. Stocking and fishing regulations are the main drivers controlling fish populations on the upper Androscoggin River (Publicover, 2003).

5.10.1 RIVERINE FISH ASSEMBLAGE

The Midwest Biodiversity Institute (MBI) sampled the Androscoggin River in 2003 to document the fish assemblage and develop a database for the distribution and abundance of fishes (Yoder et al., 2006). Riverine segments in the upper Androscoggin River had higher densities of fish as compared to downstream impounded areas (Yoder et al., 2006). The dominant fishes in the upper riverine reaches were smallmouth bass (*Micropterus dolomieu),* common shiner (*Luxilus cornutus),* fallfish (*Semotilus corporalis),* and longnose dace (*Rhinichthys cataractae).*

MBI electrofished several reaches around the Gorham Project including stations at RM 128.6 (Upstream Brookfield Gorham Dam), 128 (Brookfield Gorham Bypass Reach), 124.4 (CRP Gorham Tailwater), and 123.4 (Shelburne Impoundment). Table 5-9 shows the species collected at each station. Riverine sites sampled during this effort resulted in 2-3 times the biomass of impounded sites (Yoder et al., 2006). MBI did not capture any brook trout in 2003 and attributed this to high water temperatures during the study period.

Downstream of the Gorham Project, native brook trout are well established in tributaries between Gilead and Bethel, ME (approximately 12 RM downstream of the project) and are seasonally present in the Androscoggin River along this downstream reach (Brautigam and Pellerin, 2014). There is no certainty on the historical assemblage of native fish in the upper Androscoggin River. Wild populations in conjunction with annual stocking of hatchery brook trout, rainbow trout, and, to a small extent landlocked Atlantic salmon, contribute to the local salmonid fishery.

Landlocked salmon also exist in Howard Pond (Hanover, ME), in South Pond (Greenwood, ME) and in Bryant Pond (Woodstock, ME) which are downstream of the Gorham Project (MDIFW 2018).

TABLE 5-9 UPPER ANDROSCOGGIN RIVER FISH ASSEMBLAGE NEAR THE GORHAM PROJECT (YODER ET AL., 2003)

	RIVER MILE			
SPECIES	**128.6**	**128**	**124.4**	**123.4**
Brown Trout	-	-	X	-
Rainbow Trout	-	X	X	-
White Sucker	X	X	X	X
Longnose Sucker	-	X	X	-
Blacknose Dace	-	X	X	-
Longnose Dace	-	X	X	-
Creek Chub	-	X	-	-
Common Shiner	X	X	X	X
Golden Shiner	X	-	-	X
Spottail Shiner	X	X	X	X
Fallfish	X	X	X	X
Lake Chub	-	X	X	-
Smallmouth Bass	X	X	X	X
Largemouth Bass	X	-	-	-
Brown Bullhead	X	-	-	X
Rock Bass	X	-	-	-
Yellow Perch	X	-	X	X

5.10.2 STOCKED FISHERY

Trout have not been stocked near the Gorham Project since 1991 (Brautigam and Pellerin, 2014). Trout stocking in the upstream portions of the Androscoggin River above Berlin, NH has steadily increased since the mid-1990s; several large tributaries in NH are also continually stocked with brook, brown and rainbow trout. These tributary stocking programs, specifically on the Wild River, Peabody River, and Moose River, contribute to the trout fishery in both New Hampshire and Maine (Figure 5-4) (Brautigam and Pellerin, 2014). The Moose Rivers joins the Androscoggin River approximately 1.2 river miles upstream of the Gorham dam, the Peabody River enters the Androscoggin in the Gorham Project tailwater, and the Wild River joins the Androscoggin approximately 11 river miles downstream of the Gorham dam.

Table 5-10 provides information from New Hampshire's 2017 trout stocking data in the Androscoggin River by town, species, size, and number stocked. In total, the New Hampshire Fish and Game stocked 31,416 eastern brook trout, brown trout, and rainbow trout in the upper Androscoggin River in 2017 in the towns of Berlin, Cambridge, Dummer, Errol and Milan which are approximately 6.5 to 35 river miles upstream of the Gorham Project. Age class of stocked trout ranged from 1+YR to 3+YR (Figure 5-4, Table 5-10).

According to the Upper Androscoggin River Fishery Management Plan (2014), Sebago strain landlocked Atlantic salmon have been periodically stocked in the Androscoggin River between Gilead and Rumford Falls since 1992. The Maine Department of Inland Fisheries and Wildlife (MDIFW) reports that landlocked salmon stocking between Gilead and Rumford Falls has increased since 2005. Stocking of salmon before 2005 in this reach of the Androscoggin was approximately 1,350 fish annually, as compared to 3,000 or more fish annually since 2005 (MDIFW 2018; Brautigam and Pellerin, 2014).

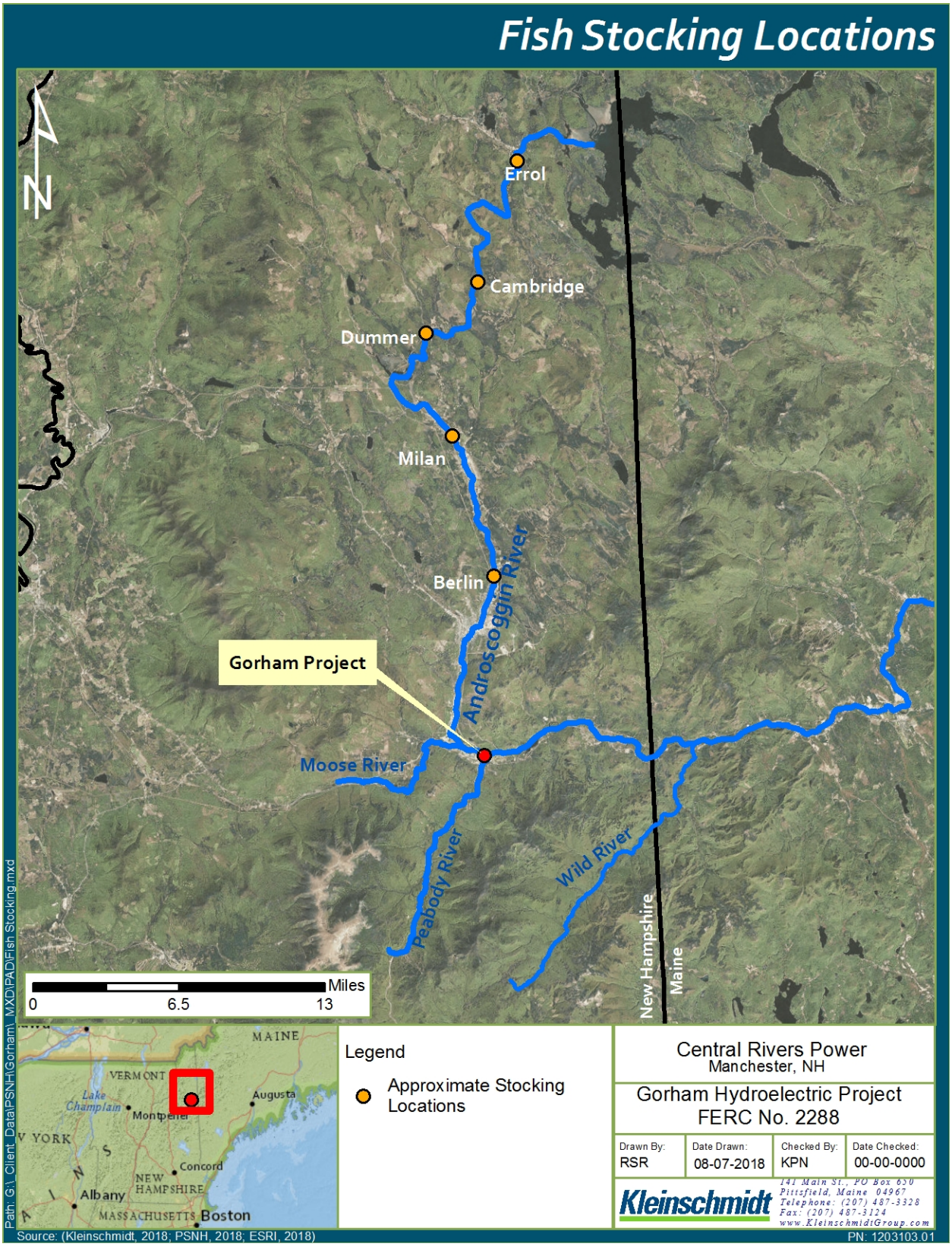


FIGURE 5-4 FISH STOCKING LOCATIONS UPSTREAM OF THE GORHAM HYDROELECTRIC PROJECT.

TABLE 5-10 2017 TROUT STOCKING DATA FOR THE UPPER ANDROSCOGGIN RIVER AND TRIBUTARIES (EBT = EASTERN BROOK TROUT, BT = BROWN TROUT, RT = RAINBOW TROUT)

TOWN OR TRIBUTARY	SPECIES	AGE	NUMBER
Berlin	EBT	1+YR	2,000
Berlin	BT	1+YR	1,800
Berlin	EBT	2+YR	500
Berlin	EBT	1+YR	2,500
Cambridge	BT	1+YR	1,979
Cambridge	EBT	1+YR	1,600
Cambridge	EBT	2+YR	200
Cambridge	RT	1+YR	1,500
Dummer	BT	1+YR	1,337
Dummer	EBT	1+YR	1,000
Dummer	EBT	2+YR	300
Dummer	RT	1+YR	2,000
Errol	BT	1+YR	1,000
Errol	EBT	1+YR	2,000
Errol	EBT	2+YR	300
Errol	EBT	3+YR	100
Errol	RT	1+YR	4,500
Milan	BT	1+YR	2,000
Milan	EBT	1+YR	1,800
Milan	EBT	2+YR	500
Milan	RT	1+YR	2,500
Moose River	EBT	1+YR	2,000
Peabody River	BT	1+YR	1,500
Peabody River	EBT	1+YR	2,000
Peabody River	RT	1+YR	2,850
Wild River	EBT	1+YR	1,200
Wild River	RT	1+YR	2,500

5.10.3 DIADROMOUS FISH SPECIES

The Gorham Project is approximately 68 river miles upstream of Lewiston Falls, which is the natural upstream migration limit for most diadromous species on the Androscoggin River. Diadromous species did not occur in the Project area historically, nor do they occur presently.

The Magnuson-Stevens Fishery Conservation and Management Act, as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-267), requires the National Marine Fisheries Service (NMFS) to describe and identify "essential fish habitat" (EFH) in each federal fishery management plan for commercial species. The Magnuson-Stevens Act requires federal agencies

to consult with NMFS when any activity is proposed to be permitted, funded or undertaken by a federal agency may have adverse effects on designated EFH. The Upper Androscoggin River does not have any commercially-managed fish species; therefore, EFH is not designated.

5.10.4 AQUATIC HABITAT

Aquatic habitat in the Gorham Project area includes an 850-foot-long reach of the Androscoggin River between the dam and powerhouse. CRP provides a minimum of 200 cfs or inflow, whichever is less, to protect water quality, fish, and wildlife resources (FERC. 1994). The reservoir has a water surface elevation of 773.53 feet and has a surface area of approximately 32-acres. The reservoir extends upstream approximately 4,700 feet; the average water depth is 10 to 15 feet (FERC 1994).

5.10.5 REFERENCES

Boucher, D.P. 1997. "Fishery Progress Report No. 97-4, Androscoggin River Survey (New Hampshire to Rumford Falls)." *Maine Department of Inland Fisheries and Wildlife.* Augusta, Maine. 7pp.

Brautigam, Francis., Pellerin, James. 2014. "Upper Androscoggin River Fishery Management Plan." *Maine Department of Inland Fisheries and Wildlife.* Division of Fisheries and Hatcheries.

Brown, Michael E., Maclaine, John., Flagg, Lewis. 2006. Androscoggin river anadromous fish restoration program. Maine Department of Marine Resources, Stock Enhancement Division, Project Number AFC-37. Report to the National Marine Fisheries Service. 94 pp.

FERC. 1994. Gorham FERC License ,1994.

Inglis, Jeff., Van Heeke, Tom., Weissman, Gideon., Hallock, Lindsey. 2014. "Waterways Restored: The Clean Water Act's Impact on 15 American Rivers, Lakes and Bays." *Environment America Research and Policy Center.*

MDIFW. 2018. Fisheries and stocking, http://www.maine.gov/ifw/fish-wildlife/fisheries/index.html

MDIFW. 2018. Fishing opportunities in Western Maine/Androscoggin River Valley Region. http://www.maine.gov/ifw/fishing-boating/fishing/fishing-opportunities/maine-fishing-guide/western-maine.html

NHFGD. 2018. Fish Stocking. https://wildlife.state.nh.us/fishing/trout-stocking.html?news=621

Publicover, David, Weihrauch, Doug. 2003. Ecological Atlas of the Upper Androscoggin River Watershed. Appalachian Mountain Club, Jan., outdoors.org.

Yoder, Chris., Kulik, Brandon., Audet, John., Bagley, Jeffrey. 2006. The spatial and relative abundance characteristics of the fish assemblages in three Maine Rivers.

5.11 TERRESTRIAL WILDLIFE AND BOTANICAL RESOURCES

The Gorham project occurs within the Northern Appalachians and Atlantic Highlands ecoregion (CEC 2011). This region covers most of the northern and mountainous regions of New England. Characteristic wildlife are moose, black bear, white-tailed deer, red fox, bobcat, lynx, snowshoe hare, porcupine, fisher, marten, racoon, beaver, rabbit, northern flying squirrel, osprey, red-tailed hawk, wild turkey, ruffed grouse, black-backed woodpecker, gray jay, common loon, and red-back salamander (CEC 2011). Vegetation here is characterized as mostly mixed hard and softwood with spruce-fir forests. Typical forests include mixed hardwoods like sugar maple, beech, and yellow birch; mixed forests with hardwoods, hemlock, and white pine; and spruce-fir forests with balsam fir, red spruce, and birches. In swampy areas, black spruce, white spruce, red maple, black ash, and tamarack dominate. The region is a transitional zone between the boreal zone to the north and the broadleaved and deciduous forests to the south.

5.11.1 TERRESTRIAL WILDLIFE

Habitat within the Gorham project is dominated by open water habitat provided by the Androscoggin River and areas of upland mixed forest and wetlands. The project is adjacent to areas of residential and commercial development and a maintained transmission corridor.

5.11.1.1 MAMMALS

The project occurs within the range of approximately 51 mammal species (AMC 2003). During surveys completed in 1989 and 1991, 21 mammal species were identified within the Project (PSNH 1993). Mammal species that are likely to occur within the project are those species which are commonly associated with riparian and residential habitats. Species such as mink (*Mustela vision*), muskrat (*Ondatra zibethicus*), beaver (*Castor canadensis*), or otter (*Lutra canadensis*) are often found on river banks or utilizing riparian habitats. Bats are common to riparian areas, and some species feed over open water, the project likely provides habitat for northern long-eared bat (*Myotis septentrionalis*), little brown bat (*Myotis lucifugus*), eastern small-footed bat (*Myotis leibii*), and the hoary bat (*Lasiurus cinereus*). Many of these bat species are also adapted to human development and often roost in attics or eves. Additional small mammal species such as skunk (*Mephitis mephitis*), fox (*Vulpes vulpes*), racoon (*Procyon lotor*), or many rodents (i.e., mice and voles) are likely common and are often found in areas of both woodland and residential development. Larger mammal species are likely less common and may occur as transient species

which are utilizing the riparian corridor, species such as white-tail deer (*Odocoileus virginianus*), coyote (*Canis latrans*), black bear (*Ursus americanus*), and moose (*Alces alces*) (AMC 2013). Table 5-11 includes a list of mammals know to occur within the Project vicinity.

TABLE 5-11 MAMMALS POTENTIALLY OCCURRING WITHIN THE PROJECT VICINITY.

COMMON NAME	LATIN NAME
Northern flying squirrel	*Glaucomys sabrinus*
Moose	*Alces*
Northern short- tailed shrew	*Blarina brevicauda*
Coyote	*Canis latrans*
American beaver	*Castor canadensis*
Star-nosed mole	*Condylura cristata*
Big brown bat	*Eptesicus fuscus*
Common porcupine	*Erethizon dorsatum*
Silver-haired bat	*Lasionycteris noctivagans*
Eastern red bat	*Lasiurus borealis*
Hoary bat	*Lasiurus cinereus*
Snowshoe hare	*Lepus americanus*
Northern river otter	*Lutra canadensis*
Lynx	*Lynx canadensis*
Bobcat	*Lynx rufus*
Woodchuck	*Marmota monax*
American marten	*Martes americana*
Fisher	*Martes pennanti*
Striped skunk	*Mephitis*
Rock vole	*Microtus chrotorrhinus*
Meadow vole	*Microtus pennsylvanicus*
Woodland vole	*Microtus pinetorum*
Ermine	*Mustela erminea*
Long-tailed weasel	*Mustela frenata*
Mink	*Mustela vison*
Eastern small- footed bat	*Myotis leibii*
Little brown myotis	*Myotis lucifugus*
Northern myotis	*Myotis septentrionalis*
Woodland jumping mouse	*Napaeozapus insignis*
White-tailed deer	*Odocoileus virginianus*
Southern red-backed v	*ole Clethrionomys gapperi*
Muskrat	*Ondatra zibethicus*
Hairy-tailed mole	*Parascalops breweri*
White-footed mouse	*Peromyscus leucopus*
Deer mouse	*Peromyscus maniculatus*

COMMON NAME	LATIN NAME
Eastern pipistrelle	*Pipistrellus subflavus*
Common raccoon	*Procyon lotor*
Eastern gray squirrel	*Sciurus carolinensis*
Masked shrew	*Sorex cinereus*
Long-tailed shrew	*Sorex dispar*
Smoky shrew	*Sorex fumeus*
Pygmy shrew	*Sorex hoyi*
Water shrew	*Sorex palustris*
Northern bog lemming	*Synaptomys borealis*
Southern bog lemming	*Synaptomys cooperi*
Eastern chipmunk	*Tamias striatus*
Red squirrel	*Tamiasciurus hudsonicus*
Common gray fox	*Urocyon cinereoargenteus*
Black bear	*Ursus americanus*
Red fox	*Vulpes vulpes*
Meadow jumping mouse	*Zapus hudsonius*

5.11.1.2 AMPHIBIANS AND REPTILES

The Gorham project occurs within the range of 10 reptiles and 16 amphibians (AMC 2013). During surveys completed in 1989 and 1991, seven reptile and amphibian species were regularly identified within the Project during surveys (PSNH 1993). Amphibians occurring within the project are those commonly associated with riverine and riparian habitat. Several frog species such as green frog (*Rana clamitans*), leopard frog (*Rana pipiens*), and pickerel frog (*Rana palustris*) are common in and adjacent to open water and rivers. Forested habitats provide forage and cover for species such as yellow spotted salamander (*Ambystoma maculatum*), blue spotted salamander (*Ambystoma laterale*), gray treefrog (*Hyla versicolor*), wood frog (*Rana sylvatica*), and redback salamander (*Plethodon cinereus*) as well as reptiles such as garter snakes (*Thamnophis sirtalis*) and milk snakes (*Lampropeltis triangulum*). Open water habitat is utilized by reptiles such as snapping turtle (*Chelydra serpentina*) and painted turtle (*Chrysemys picta*) (AMC 2013). Table 5-12 includes reptiles and amphibians which occur within the Project vicinity.

TABLE 5-12 REPTILES AND AMPHIBIANS POTENTIALLY OCCURRING WITHIN THE PROJECT VICINITY.

COMMON NAME	LATIN NAME
Blue spotted salamander	*Ambystoma laterale*

Spotted salamander	*Ambystoma maculatum*
American toad	*Bufo americanus*
Snapping turtle	*Chelydra serpentine*
Painted turtle	*Chrysemys picta*
Wood turtle	*Clemmys insculpta*
Dusky salamander	*Desmognathus fuscus*
Ringneck snake	*Diadophis punctatus*
Northern two-lined salamander	*Eurycea bislineata*
Spring salamander	*Gyrinophilus porphyriticus*
Common garter snake	*hamnophis sirtalis*
Gray treefrog	*Hyla versicolor*
Milk snake	*Lampropeltis triangulum*
Smooth green snake	*Liochlorophis vernalis*
Northern water snake	*Nerodia sipedon*
Eastern newt	*Notophthalmus viridescens*
Redback salamander	*Plethodon cinereus*
Spring peeper	*Pseudacris crucifer*
Bullfrog	*Rana catesbeiana*
Green frog	*Rana clamitans*
Pickerel frog	*Rana palustris*
Northern leopard frog	*Rana pipiens*
Mink frog	*Rana septentrionalis*
Wood frog	*Rana sylvatica*
Redbelly snake	*Storeria occipitomaculata*
Eastern ribbon snake	*Thamnophis sauritus*

5.11.1.3 BIRDS

The project location occurs within the range of 155 species of birds (AMC 2013). During surveys completed in 1989 and 1991, 88 bird species were regularly identified within the Project during surveys (PSNH 1993). Birds within the project may include several species that feed on, in or over open water. Species such as Kingfisher (*Ceryle alcyon*) and Mallard ducks (*Anas platyrhynchos*) as well as shoreline feeders such a Spotted Sandpiper (*Actitis macularia*) or Great Blue Heron (*Ardea Herodias*) may utilize the impoundment. Riparian areas are utilized by any number or resident and migratory bird species including common species such as Black-Capped Chickadee (*Poecile atricapillus*), Red-Winged Blackbird (*Agelaius phoeniceus*), and Crows

(*Corvus brachyrhynchos*). Table 5-13 includes a list of potential bird species that may occur within the Project, based on known ranges.

TABLE 5-13 BIRD SPECIES POTENTIALLY OCCURRING WITHIN THE PROJECT VICINITY.

COMMON NAME	LATIN NAME
Cooper's hawk	*Accipiter cooperii*
Northern goshawk	*Accipiter gentilis*
Sharp-shinned hawk	*Accipiter striatus*
Spotted sandpiper	*Actitis macularia*
Northern saw-whet owl	*Aegolius acadicus*
Red-winged blackbird	*Agelaius phoeniceus*
Wood duck	*Aix sponsa*
Green-winged teal	*Anas crecca*
Blue-winged teal	*Anas discors*
Mallard	*Anas platyrhynchos*
American black duck	*Anas rubripes*
American pipit	*Anthus rubescens*
Golden eagle	*Aquila chrysaetos*
Ruby-throated hummingbird	*Archilochus colubris*
Great blue heron	*Ardea Herodias*
Long-eared owl	*Asio otus*
Ring-necked duck	*Aythya collaris*
Tufted titmouse	*Baeolophus bicolor*
Cedar waxwing	*Bombycilla cedrorum*
Ruffed grouse	*Bonasa umbellus*
American bittern	*Botaurus lentiginosus*
Canada goose	*Branta canadensis*
Great horned owl	*Bubo virginianus*
Common goldeneye	*Bucephala clangula*
Red-tailed hawk	*Buteo jamaicensis*
Red-shouldered hawk	*Buteo lineatus*
Broad-winged hawk	*Buteo platypterus*
Green heron	*Butorides virescens*
Whip-poor-will	*Caprimulgus vociferous*
Northern cardinal	*Cardinalis*
Pine siskin	*Carduelis pinus*
American goldfinch	*Carduelis tristis*
Purple finch	*Carpodacus purpureus*
Bicknell's thrush	*Catharus bicknelli*
Veery	*Catharus fuscescens*
Hermint thrush	*Catharus guttatus*
Swainson's thrush	*Catharus ustulatus*

COMMON NAME	LATIN NAME
Brown creeper	*Certhia Americana*
Belted kingfisher	*Ceryle alcyon*
Chimney swift	*Chaetura pelagica*
Killdeer	*Charadrius vociferus*
Black tern	*Chlidonias niger*
Common nighthawl	*Chordeiles minor*
Northern harrier	*Circus cyaneus*
Evening grosbeak	*Coccothraustes vespertinus*
Yellow-billed cuckoo	*Coccyzus americanus*
Black-billed cuckoo	*Coccyzus erythropthalmus*
Northern flicker	*Colaptes auratus*
Olive-sided flycathcer	*Contopus cooperi*
Eastern wood-pewee	*Contopus virens*
American crow	*Corvus brachyrhynchos*
Common raven	*Corvus corax*
Blue jay	*Cyanocitta cristata*
Black-throated blue warbler	*Dendroica caerulescens*
Bay-breasted warbler	*Dendroica castanea*
Yellow-rumped warbler	*Dendroica coronate*
Blackburnian warbler	*Dendroica fusca*
Magnolia warbler	*Dendroica magnolia*
Palm warbler	*Dendroica palmarum*
Chestnut-sided warbler	*Dendroica pensylvanica*
Yellow warbler	*Dendroica petechia*
Pine warbler	*Dendroica pinus*
Blackpoll warbler	*Dendroica striata*
Cape May warbler	*Dendroica tigrine*
Black-throated green warbler	*Dendroica virens*
Bobolink	*Dolichonyx oryzivorus*
Pileated woodpecker	*Dryocopus pileatus*
Gray catbird	*Dumetella carolinensis*
Alder flycatcher	*Empidonax alnorum*
Yellow-bellied flycatcher	*Empidonax flaviventris*
Least flycatcher	*Empidonax minimus*
Willow flycatcher	*Empidonax traillii*
Horned lark	*Eremophila alpestris*
Rusty blackbird	*Euphagus carolinus*
Spruce grouse	*Falcipennis canadensis*
Merlin	*Falco columbarius*
Peregrine falcon	*Falco peregrinus*
American kestrel	*Falco sparverius*

COMMON NAME	LATIN NAME
Common snipe	*Gallinago*
Common loon	*Gavia immer*
Common yellowthroat	*Geothlypis trichas*
Bald eagle	*Haliaeetus leucocephalus*
Barn swallow	*Hirundo rustica*
Wood thrush	*Hylocichla mustelina*
Baltimore oriole	*Icterus galbula*
Dark-eyed junco	*Junco hyemalis*
Herring gull	*Larus argentatus*
Hooded merganser	*Lophodytes cucullatus*
Red crossbill	*Loxia curvirostra*
White-winged crossbill	*Loxia leucoptera*
Swamp sparrow	*Melospiza georgiana*
Lincoln's sparrow	*Melospiza lincolnii*
Song sparrow	*Melospiza melodia*
Common merganser	*Mergus merganser*
Red-breasted merganser	*Mergus serrator*
Northern mockingbird	*Mimus polyglottos*
Black-and-white-warbler	*Mniotilta varia*
Brown-headed cowbird	*Molothrus ater*
Great crested flycatcher	*Myiarchus crinitus*
Mourning warbler	*Oporornis Philadelphia*
Osprey	*Pandion haliaetus*
Northern parula	*Parula Americana*
Savannah sparrow	*Passerculus sandwichensis*
Indigo bunting	*Passerina cyanea*
Gray jay	*Perisoreus canadensis*
Cliff swallow	*Petrochelidon pyrrhonota*
Rose-breasted grosbeak	*Pheucticus ludovicianus*
Black-backed woodpecker	*Picoides arcticus*
Downy woodpecker	*Picoides pubescens*
Three-toed woodpecker	*Picoides tridactylus*
Hairy woodpecker	*Picoides villosus*
Eastern towhee	*Pipilo erythrophthalmus*
Scarlet tanager	*Piranga olivacea*
Pied-billed grebe	*Podilymbus podiceps*
Black-capped chickadee	*Poecile atricapillus*
Boreal chickadee	*Poecile hudsonicus*
Blue-gray gnatcatcher	*Polioptila caerulea*
Vesper sparrow	*Pooecetes gramineus*
Sora	*Porzana Carolina*

COMMON NAME	LATIN NAME
Common grackle	*Quiscalus quiscula*
Virginia rail	*Rallus limicola*
Ruby-crowned kinglet	*Regulus calendula*
Golden-crowned kinglet	*Regulus satrapa*
Bank swallow	*Riparia*
Eastern phoebe	*Sayornis phoebe*
American woodcock	*Scolopax minor*
Ovenbird	*Seiurus aurocapillus*
Northern waterthrush	*Seiurus noveboracensis*
American redstart	*Setophaga ruticilla*
Eastern bluebird	*Sialia sialis*
Red-breasted nuthatch	*Sitta canadensis*
White-breasted nuthatch	*Sitta carolinensis*
Yellow-bellied sapsucker	*Sphyrapicus varius*
Chipping sparrow	*Spizella passerine*
Field sparrow	*Spizella pusilla*
Northern rough-winged swallow	*Stelgidopteryx serripennis*
Barred owl	*Strix varia*
Eastern meadowlark	*Sturnella magna*
Tree swallow	*Tachycineta bicolor*
Brown thrasher	*Toxostoma rufum*
House wren	*Troglodytes aedon*
Winter wren	*Troglodytes*
American robin	*Turdus migratorius*
Eastern kingbird	*Tyrannus*
Tennessee warbler	*Vermivora peregrina*
Nashville warbler	*Vermivora ruficapilla*
Yellow-throated vireo	*Vireo flavifrons*
Warbling vireo	*Vireo gilvus*
Red-eyed vireo	*Vireo olivaceus*
Philadelphia vireo	*Vireo philadelphicus*
Blue-headed vireo	*Vireo solitarius*
Canada warbler	*Wilsonia canadensis*
Wilson's warbler	*Wilsonia pusilla*
Mourning dove	*Zenaida macroura*
White-throated sparrow	*Zonotrichia albicollis*

5.11.2 BOTANICAL RESOURCES

The Upper Androscoggin watershed, in which the project occurs, contains around 35 upland communities identified by the New Hampshire Natural Heritage Inventory (AMC 2013). The Project is located along the Androscoggin River and ranges from approximately 700-800 feet (MSL) in elevation. Forest within this region include forests commonly found within the northern transitional hardwood-coniferous zone as well as forests associated with river floodplains. Upland forests within the project are likely dominated by Hemlock-spruce-northern hardwood forests. This community is characterized by hemlock (*Tsuga canadensisand*) and red spruce (*Picea rubens*), with a variable component of northern hardwoods including sugar maple (*Acer saccharum*), yellow birch (*Betula alleghaniensis*), and American beech (*Fagus grandifolia*). Birches, particularly yellow birch, paper birch (*B. papyrifera var. papyrifera*), and gray birch (*B. populifolia*), are frequent and sometimes abundant. Balsam fir (*Abies balsamea*) may be present but is usually not prominent other than on the terrace flats. Yellow birch is frequent in both the over and understory while American beech is occasional but not prominent. The woody understory frequently contains hobblebush (*Viburnum alnifolium*) and stripped maple (*Acer pensylvanicum*). Herbaceous plant composition is variable, with, northern plants such as northern wood sorrel (*Oxalis acetosella*), shining clubmoss (*Huperzia lucidula*), bluebead lily (*Clintonia borealis*), twisted stalk (*Streptopus roseus*), and mountain wood fern (*Dryopteris campyloptera*). Based on the close proximity of the Androscoggin River, portions of the riparian forest likely also include the Conifer-hardwood terrace flat community which is dominated by a greater amount of sugar maple, red maple (*Acer rubrum*) and yellow, paper, and gray birches (Sperduto 2004).

The second major forested habitat within the Project are areas of Silver maple-wood nettle-ostrich fern floodplain forest. These forests are found along large rivers, such as the Androscoggin. The tree layer in these areas often are dominated by silver maple (*Acer saccharinum*), with white ash (*Fraxinus americana*), American elm (*Ulmus americana*), and occasionally eastern cottonwood (*Populus deltoides*) present in varying proportions. Similar species are usually growing in understory; however, shrubs and vines grow only along edges or in recent gaps created by natural or human-induced disturbance. The shrub layer is typically poorly developed or absent. Herbaceous growth r is often strongly dominated by ostrich fern (*Matteuccia struthiopteris var. pensylvanica*) and wood nettle (*Laportea canadensis*). Other

herbaceous and vine species are usually present, but never dominant, and may include sensitive fern (*Onoclea sensibilis*), northern lady fern (*Athyrium filix-femina*), false nettle (*Boehmeria cylindrica*), jewelweed (*Impatiens capensis*), tall meadowrue (*Thalictrum pubescens*), Jack-in-the-pulpit (*Arisaema triphyllum*), Virginia creeper (*Parthenocissus quinquefolia*), and Joe-pye-weed (*Eupatorium maculatum*) (Sperduto 2004).

The New Hampshire Natural Heritage Bureau has a record for a sugar maple - silver maple - white ash floodplain forest west (upstream of) the dam, as well as areas to the east (downstream of) the dam. The presence of the dam may contribute to the current condition of these communities, for example maintaining the headpond at elevation 96.75 feet may alter downstream flood regimes to unknown effect. However, the inflow from the Peabody River may lessen influence from the dam. This location is one of only two documented exemplary sugar maple - silver maple - white ash floodplain forests in the state (Appendix H).

Other habitats within the Project include areas of maintained transmission right-of-way and residential and commercial development. Right-of-way areas are maintained to be free of tall woody vegetation and are often dominated by shrubs and weedy species. In areas of residential and commercial development planted ornamentals and manicured lawns are common.

Riparian habitats often provide areas for establishment of invasive species. The New Hampshire list of Noxious Weeds includes 18 species, many of which are often found along streams, rivers and roadside. Table 5-14 includes the listed Noxious Weeds for New Hampshire.

TABLE 5-14 NEW HAMPSHIRE NOXIOUS WEEDS LIST[1]

COMMON NAME	SCIENTIFIC NAME
tree of heaven	*Ailanthus altissima (Mill.) Swingle*
garlic mustard	*Alliaria petiolata (M. Bieb.) Cavara & Grande*
European barberry	*Berberis vulgaris L.*
Oriental bittersweet	*Celastrus orbiculatus Thunb.Cynanchum louiseae Kartesz & Gandhi*
black swallow-wort	*Cynanchum nigrum (L.) Pers., non Cav.*
pale swallow-wort	*Cynanchum rossicum (Kleopow) Borhidi*
autumn olive	*Elaeagnus umbellata Thunb.Frangula alnus Mill.*
giant hogweed	*Heracleum mantegazzianum Sommier & Levier*
water-flag	*Iris pseudacorus L.*
blunt-leaved privet	*Ligustrum obtusifolium Siebold & Zucc.*

COMMON NAME	SCIENTIFIC NAME
showy bush honeysuckle	*Lonicera ×bella Zabel [morrowii × tatarica]*
Japanese honeysuckle	*Lonicera japonica Thunb.*
Morrow's honeysuckle	*Lonicera morrowii A. Gray*
Tartarian honeysuckle	*Lonicera tatarica L.*
Japanese knotweed	*Polygonum cuspidatum Siebold & Zucc.*
common buckthorn	*Rhamnus cathartica L.*
glossy buckthorn	*Rhamnus frangula L.*
multiflora rose	*Rosa multiflora Thunb.*

[1] New Hampshire Code of Administrative Rules. 2004. Invasive species, Chapter Agr. 3800 (15 September 2004). State of New Hampshire.

5.11.3 REFERENCES

Appalachian Mountain Club (AMC). 2013. Ecological Atlas of the Upper Androscoggin River Watershed. Published by the Appalachian Mountain Club, Gorham, NH.

Commission for Environmental Cooperation (CEC). 2011. North American Terrestrial Ecoregions: Level III. Published by the Commission for Environmental Cooperation. Montreal, Quebec, CA.

Public Service Company of New Hampshire (PSNH). November 1993. Final Environmental Impact Statement: Relicensing Seven Existing Projects in the Upper Androscoggin River Basin; FERC Project Nos. 2422-004, 2287-003, 2326-002, 2327-002, 2311-001, 2288-004, 2300-002.

Sperduto, Daniel D. and William F. Nichols. 2004. Natural Communities of New Hampshire. The New Hampshire Natural Heritage Bureau and Nature Conservancy. UNH Cooperative Extension, Durham, NH.

5.12 WETLANDS, RIPARIAN AND LITTORAL HABITAT

The Project occurs within the Upper Androscoggin watershed on the Androscoggin River and includes several wetlands. The shoreline and much of the impoundment supports the littoral zone, and nearly all the upland areas provide riparian habitat.

5.12.1 WETLANDS

In 1991 there were approximately 13 acres of wetlands (scrub-shrub and emergent) identified within the Gorham study area (which included areas outside the Project boundary) (PSNH 1991). The National Wetland Inventory (NWI) (USFWS 2018) identifies forested and scrub shrub wetlands within the Project as well as riverine (open water habitat). Palustrine wetland habitats account for 11.5 acres of wetland habitat. Forested wetlands within the Project are mapped as temporary flooded (i.e., from a few days to a few weeks during the growing season) and broad-leaved deciduous (Cowardin et al 1979). Forested wetlands are likely dominated by a mix of hardwood such as red maple (Acer rubrum), silver maple, green ash (*Fraxinus pennsylvanica*), and occasional softwoods such as balsam fir (*Abies balsamea*). Shrub layer vegetation normally includes saplings of overstory species along with common species such as speckled alder (*Alnus incanna*) or winterberry (*Ilex verticilata*). Herbaceous vegetation is variable depending on light infiltration, but commonly includes sensitive fern (*Onoclea sensibilis*), ostrich fern, meadow rue, jewelweed, and a number of sedges (*Carex spp*) (AMC 2013; Gawler 2010).

Scrub-shrub wetlands within the Project are mapped as temporary flooded (i.e., from a few days to a few weeks during the growing season) and broad-leaved deciduous (Cowardin et al 1979). These Scrub-Shrub habitats are generally dominated by speckled alder, and occasionally button bush (*Cephalanthus occidentalis*). Herbaceous vegetation is variable depending on light infiltration, but commonly includes sensitive fern (*Onoclea sensibilis*), ostrich fern, meadow rue, jewelweed, and a number of sedges (*Carex spp*) (AMC 2013; Gawler 2010).

TABLE 5-15 WETLANDS IDENTIFIED WITHIN THE PROJECT AREA (NWI)

Wetland Type	Classification	Acres
Forested Wetland	PFO1A	9.1
Scrub-shrub Wetland	PSS1A	2.4
Riverine (Open water)	R2UBH	43.8
Total		**55.3**

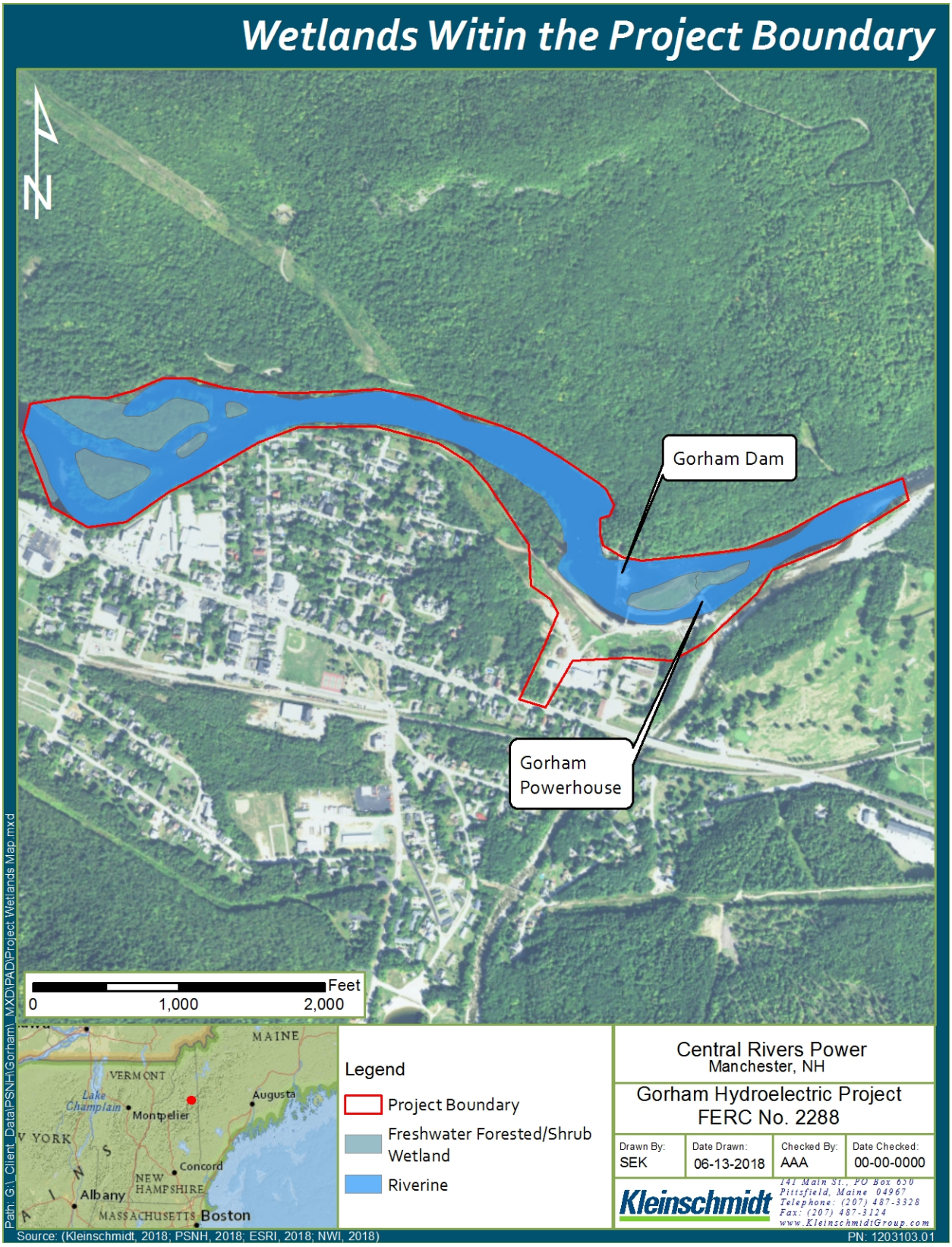


FIGURE 5-5 PROJECT WETLANDS

5.12.2 RIPARIAN AND LITTORAL HABITAT

Riparian areas are transitional zones along the shores of streams, rivers and lakes and are zones that often influence, and are influenced by, the presence of open water. They are an especially important part of the landscape. Riparian areas along major rivers in the Upper Androscoggin watershed have recovered from the damage caused by river drives in past decades (AMC 2013). Riparian areas within the project are a combination of upland and wetland habitats dominated by vegetation common to forest within the northern transitional hardwood-coniferous zone as well as forests associated with river floodplains. Portions of the riparian area are developed or adjacent to maintained transmission rights of way. These areas are often dominated by weedy or shrub species commonly found in disturbed sites.

The littoral zone is the transitional zone between terrestrial and aquatic habitat, in the case of the Androscoggin River, much of the aquatic habitat is considered part of the littoral zone as water depths allow for vegetation to occur. The littoral zone is a broadly defined community dominated by floating leaved, submersed, and emergent herbaceous species in shallow quiet water areas of ponds, lakes, oxbows, streams and rivers. Water depths for aquatic bed habitats typically are at least 2-3 feet in mid-late summer or shallower but semi-permanently to permanently flooded. This zone may also include deeper emergent marshes consisting primarily of emergent rather than floating or submersed species and have water depths generally less than 2-3 feet. Characteristic species include bur-reed (*Sparganium americanum*), pickerel weed (*Pontederia*), arum (*Peltandra virginica*), arrowhead (*Sagittaria latifolia*), pondweed (*Potamogeton spp*.), water lily (*Nuphar variegata*), and white water-lily (*Nymphaea odorata*). Submerged aquatic vegetation often includes bladderworts (Utricularia spp.), waterweeds (*Elodea spp*.), eel grass (*Vallisneria americana*), duckweeds (*Lemna spp*.), and milfoil (*Myriophyllum humile*) (Sperduto 2004).

While no aquatic invasive species are identified in Gorham, NH (NHDES 2017) there are several known occurrences of aquatic invaders that pose a potential risk of infestation. Species known to occur within New Hampshire, as of 2017 include curly-leaf pondweed (*Potamogeton crispus*), Eurasian watermilfoil (*Myriophyllum spicatum*), European naiad (*Najas minor*), fanwort (*Cabomba caroliniana*), variable milfoil (*Myriophyllum heterophyllum*), water chestnut (*Trapa natans*) (NHDES 2017).

5.12.3 REFERENCES

Appalachian Mountain Club (AMC). 2013. Ecological Atlas of the Upper Androscoggin River Watershed. Published by the Appalachian Mountain Club, Gorham, NH.

Cowardin, L.M., V. Carter V., F.C. Golet, E.T. LaRoe. 1979. Classification of Wetlands and Deepwater Habitats of the United States. U.S. Fish and Wildlife Service Report No. FWS/OBS/-79/31.Washington, D.C.

Gawler, Susan and A. Cutko. 2010. Natural Landscapes of Maine: A Guide to Natural Communities and Ecosystems. Maine Natural Areas Program, Maine Department of Conservation.

New Hampshire Department of Environmental Services (NHDES). 2017. Aquatic Invasive Species Infestation in New Hampshire. Available online at: https://www.des.nh.gov/organization/divisions/water/wmb/exoticspecies/documents/milfoil_map_list.pdf [Accessed May 29, 2018].

Public Service Company of New Hampshire (PSNH). November 1993. Final Environmental Impact Statement: Relicensing Seven Existing Projects in the Upper Androscoggin River Basin; FERC Project Nos. 2422-004, 2287-003, 2326-002, 2327-002, 2311-001, 2288-004, 2300-002.

Sperduto, Daniel D. and William F. Nichols. 2004. Natural Communities of New Hampshire. The New Hampshire Natural Heritage Bureau and Nature Conservancy. UNH Cooperative Extension, Durham, NH.

5.13 RARE, THREATENED, AND ENDANGERED SPECIES

The Endangered Species Act (ESA) was passed in 1973 to protect those animals and plants and associated habitats that are in danger of becoming extinct. The U.S. Fish and Wildlife Service (USFWS) classifies animals and plants into two categories: "endangered species" are in danger of extinction throughout the area in which they are usually found and "threatened species" are those that could become endangered in the near future. The bald eagle was removed from the ESA list on June 28, 2007. However, bald eagles remain federally protected under the Bald and Golden Eagle Protection Act of 1940 and the Migratory Bird Treaty Act.

Wildlife species in New Hampshire may also be protected under the New Hampshire Endangered Species Conservation Act (NHESCA) (NHFGD 2017). Depending on their level of vulnerability to extinction, species may be listed as Endangered or Threatened. Under NHESCA, a species may also be identified as Special Concern if it does not meet the criteria of endangered or threatened but is particularly vulnerable and could easily become threatened or is suspected to be endangered or threatened but for which insufficient data exists (NHFGD 2018a).

5.13.1 RARE SPECIES

FEDERAL

The USFWS has identified two mammals listed on the federally threatened species list (USFWS 2018); the June 12, 2018 and again on February 1, 2019, USFWS Species List conducted under the Information for Planning and Consultation (IPaC) project planning tool shows that the Canada lynx (*Lynx canadensis*) and the northern long-eared bat (*Myotis septentrionalis*) may occur in the Project Area or may be affected by the Project.

STATE

Based on the available habitat and ranges of the state listed species using the New Hampshire Fish and Game species list and fact sheets within the New Hampshire Wildlife Action Plan, three additional bat species have been identified as having the potential to occur in or near the Project Area (Table 5-16).

TABLE 5-16 POTENTIAL STATE AND FEDERALLY LISTED SPECIES THAT MAY OCCUR IN THE PROJECT AREA.

COMMON NAME	SCIENTIFIC NAME	STATUS
Eastern small-footed bat	*Myotis leibii*	SE
Little brown bat	*Myotis lucifugus*	SE
Northern long-eared bat	Myotis septentrionalis	SE, FT
Tri-colored bat	Perimyotis subflavus	SE
Canada lynx	Lynx canadensis	SE, FT

SE – State endangered
FT – Federally threatened
Source; USFWS 2018

5.13.2 THREATENED AND ENDANGERED WILDLIFE SPECIES DISTRIBUTION AND LIFE HISTORY INFORMATION

EASTERN SMALL-FOOTED BAT

The eastern small-footed bat (ESFB) has isolated occurrences in Coos County and Rockingham County in New Hampshire. Summer records are known from seven localities: The White Mountain National Forest, Bartlett, New Boston, Peirmont, Surry, Hinsdale, and Newington (NHWAP 2015).

In winter, ESFB require cave or mine habitat that provides adequate characteristics for successful hibernation. Such characteristics include low levels of human disturbance and a stable microclimate (NHWAP 2015). There is potential for the ESFB to utilize the Project area for feeding purposes.

LITTLE BROWN BAT

The little brown bat (LBB) is a migratory bat found throughout New England, whose habitat depends on the season and setting. LBB live in colonies that can range from hundreds to thousands of individuals (National Wildlife Federation 2015). During the winter, LBB hibernate in caves, abandoned mines, or other caverns. The mating season usually starts in August and pups are born approximately two months later. Little brown bats feed strictly on insects and will typically live to six or seven years (National Wildlife Federation 2015). There is potential for the little brown bat to utilize the Project area for feeding purposes.

NORTHERN LONG-EARED BAT

The northern long-eared bat (NLEB) is listed as a federally threatened species and is listed as Endangered at the state level. The NLEB was listed as threatened on April 2, 2015, with a final rule published in the Federal Register on January 14, 2016. On April 27, 2016, the USFWS determined that the designation of critical habitat for the species was not prudent; therefore, no critical habitat is established for the NLEB (USFWS, 2016).

The NLEB feeds on invertebrates and is known to glean prey from vegetation and water surfaces. The NLEB winters in underground caves and cave like structures, but summers singly or in small colonies in cavities, under bark, or in hollows of live and dead trees typically greater than 3 in. in diameter. Suitable roosting trees also include exfoliating bark, cavities, or cracks (USFWS, 2016).

While the Project falls within the range of the NLEB it is unlikely that the overwintering or summer roosting occurs with the Project, although feeding may occur over the impoundment. Based on their known distribution, these bat species could occur in the Gorham Project Area.

TRI-COLORED BAT

The tri-colored bat (TCB) is listed as a listed as endangered at the state level. The TCB winters in caves and mines, and occasionally use other structures to hibernate with low levels of human disturbance and temperature stability. No available data describe the summer habitat requirements of tricolored bats in New Hampshire. The few available data on summer habitat use and life history come from the Midwest. After leaving hibernacula, female tricolored bats from maternity colonies in live or dead foliage of deciduous trees (NHWAP 2015).

Currently the majority of the project boundary is surrounded by hardwood riparian forest and by urban development. While the Project falls within the range of the TCB it is unlikely that the overwintering or summer roosting occurs with the Project, although feeding may occur over the impoundment.

CANADA LYNX

Lynx occupy various habitats in the boreal forests and their southern extensions. In eastern forests, dominant vegetation includes spruce (*Picea spp.)* and balsam fir (*Abies balsamea*).

Snowshoe hare (*Lepus americanus*) are important prey for lynx, and young or subalpine stands may be preferred because they contain more hare than do mature stands. Though data on competition and predation are equivocal, lynx may avoid bobcat (*Lynx rufus*) and coyote (*Canis latrans*) by seeking deep snow, to which lynx are morphologically adapted (long legs and large feet) (NHWAP 2015).

Although critical habitat has been designated on Maine, northern New Hampshire is only considered supporting landscape for the species. It is unlikely that the Canada lynx would use the Project area for anything other than for transient purposes.

MIGRATORY BIRDS

The protection of birds is regulated by the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)).

Bald eagles are no longer listed under the ESA but maintain federal protection under the Bald and Golden Eagle Protection Act and legally protected in New Hampshire. Bald eagles typically nest near large bodies of open water, such as lakes and large rivers. Eagles nest in large, super-canopy trees or snags often in late-successional forest. They prefer a nest site at the edge of the forest, near foraging areas, unobstructed views, and with little human disturbance. Most eagles forage primarily on fish, with lesser quantities of waterfowl, carrion, and small mammals. The bald eagle often winters along large interior or coastal bodies of water that remain free of ice (NHFG 2018b).

TABLE 5-17 BIRDS OF CONSERVATION CONCERN THAT MAY OCCUR WITHIN OR IN THE PROJECT AREA.

COMMON NAME	SCIENTIFIC NAME	LEVEL OF CONCERN	PROBABILITY OF PRESENCE
Bald eagle	*Haliaeetus leucocephalus*	Non-BCC	Breeds Dec 1 to Aug 31
Cape May Warbler	*Setophaga tigrina*	BCC Rangewide	Breeds Jun 1 to July 31
Evening Grosbeak	*Coccothraustes vespertinus*	BCC Rangewide	Breeds May 15 to Aug 10
Rusty Blackbird	*Euphagus carolinus*	BCC Rangewide	Breeds May 10 to July 20

Source: USFWS 2018

5.13.3 RARE, THREATENED, AND ENDANGERED BOTANICAL RESOURCES AND HABITATS

The Project area and immediate vicinity includes a wide variety of upland and wetland habitat associated with the shoreline of Androscoggin River. The New Hampshire Natural Heritage Bureau identifies 13 rare plant species that have historically been documented in Gorham, New Hampshire (NHNHB 2018). Of the 13, there is one species, the state endangered climbing hempvine that has been seen once in over 20 years (Table 5-18).

TABLE 5-18 RARE PLANTS REPORTED IN GORHAM, NEW HAMPSHIRE

			# REPORTED LAST 20 YEARS	
COMMON NAME	**SCIENTIFIC NAME**	**STATE LISTED**	**TOWN**	**STATE**
auricled twayblade	*Neottia auriculata*	E	Historical	8
** climbing hempvine	*Mikania scandens*	E	1	11
dwarf blueberry	*Vaccinium cespitosum*	T	Historical	17
fragrant wood fern	*Dryopteris fragrans*	T	Historical	15
heart-leaved twayblade	*Neottia cordata*	T	Historical	24
Hornemann's willow-herb	*Epilobium hornemannii ssp. hornemannii*	T	Historical	14
mountain sweet-cicely	*Osmorhiza berteroi*	E	Historical	23
ovoid spikesedge	*Eleocharis ovata*	E	Historical	12
parasol sedge	*Carex umbellata*	E	Historical	12
pink shinleaf	*Pyrola asarifolia ssp. asarifolia*	E	Historical	10
purple virgin's-bower	*Clematis occidentalis ssp. occidentalis*	E	Historical	25
round-leaved orchid	*Amerorchis rotundifolia*	E	Historical	1
smooth cliff fern	*Woodsia glabella*	E	Historical	4

** = Very High Importance
Source: NH Natural Heritage Bureau 2018

The NHB has identified there is record for a sugar maple - silver maple - white ash floodplain forest west (upstream of) the dam, as well as areas to the east (downstream of) the dam. This location is one of only two documented exemplary sugar maple - silver maple - white ash floodplain forests in the state. Portions of this natural community are described as having evident disturbance and patchy distribution of invasive species while records indicate that to the east "was a typical, non-disturbed patch of high terrace floodplain forest".

The first part of the existing Gorham powerhouse was built in 1909. Additional parts of the Gorham Project were built from 1917 to 1923 in stages by the Twin State Gas and Electric

Company. In addition, the dam was enlarged several times, in 1903, 1927-1928, and 1958-1959. The Gorham Project was acquired by PSNH in 1943.The Project is operated as run-of-river with no impoundment fluctuations. Article 402 of the existing license requires there be a minimum flow release of 200 cfs from the Gorham dam at all times.

5.13.4 REFERENCES

National Wildlife Federation. 2015. Little Brown Bat. [Online] URL: https://www.nwf.org/Wildlife/Wildlife-Library/Mammals/Bats/Little-Brown-Bat.aspx [Accessed July 20, 2015].

New Hampshire Fish and Game Department (NHFGD). 2017. Endangered and Threatened Wildlife of New Hampshire. [Online] https://www.wildlife.state.nh.us/nongame/documents/endangered-threatened-wildlife-nh.pdf. Accessed June 15, 2018.

New Hampshire Fish and Game (NHFG). 2018a. Endangered and Threatened Wildlife of NH. [Online] https://www.wildlife.state.nh.us/nongame/endangered-list.html. Accessed June 15, 2018.

New Hampshire Fish and Game (NHFG). 2018b. Bald eagle (*Haliaeetus leucocephalus*). [Online] https://www.wildlife.state.nh.us/wildlife/profiles/bald-eagle.html. Accessed June 15, 2018.

New Hampshire Natural Heritage Bureau (NHNHB). 2018. Rare Plants, Rare Animals, and Exemplary Natural Communities in New Hampshire Towns. [Online] https://www.nhdfl.org/DRED/media/Documents/Natural%20Heritage/TownLists.pdf. Accessed June 15, 2018.

U.S. Fish and Wildlife Service (USFWS). 2016a. Species Profile: Northern Long-Eared Bat (*Myotis septentrionalis*). Available online at http://www.fws.gov/midwest/endangered/mammals/nlba/index.html Accessed July 20, 2016.

U.S. Department of Interior: U.S. Fish and Wildlife Service (USFWS). 2019. Updated list of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your project. Gorham Hydroelectric Project (FERC No. 2288). June 12, 2018.

5.14 RECREATION AND LAND USE

5.14.1 EXISTING RECREATION FACILITIES AND OPPORTUNITIES IN THE PROJECT BOUNDARY

CRP provides recreation facilities along the south shore of the Gorham project including a walking trail, a picnic area, a canoe portage, a fishing area downstream of the powerhouse, parking, and an information kiosk; a second information kiosk is located on the north shore of the project (Figure 5-6) (FERC 1995; PSNH 2005, 2010, 2015). Access to the Androscoggin River within the Gorham project boundary is also available from Hogan Road which runs along the northern shore (Figure 5-6). Hogan Road is an informal road primarily used by all-terrain vehicles (ATV) and mountain bikers.

5.14.2 PROJECT RECREATION USE AND CAPACITIES

PSNH filed a recreation use report with FERC every five years for the Gorham Project (FERC 1995). Annual recreation use information is obtained from observations made by project operators who record the number of people recreating at the project during each visit to the facility and from self-reporting surveys available at the two information kiosks (FERC 1995). The total number of visitors to the Gorham Project were 160 from 1996-1999, 314 from 2000 to 2004, 596 from 2005 to 2009, and 469 from 2010 to 2014 (Table 5-19). The most popular activities at the Gorham Project were walking and hiking followed by fishing and biking (PSNH 2000, 2005, 2010, 2015).

TABLE 5-19 NUMBER OF RECREATION VISITS FROM THE 5-YEAR RECREATION USAGE REPORTS FOR THE GORHAM PROJECT.

RECORDING METHOD	1996-1999	2000-2004	2005-2009	2010-2014
Operator Reports	-	251	503	401
Surveys	-	63	93	68
Total	160	314	596	469

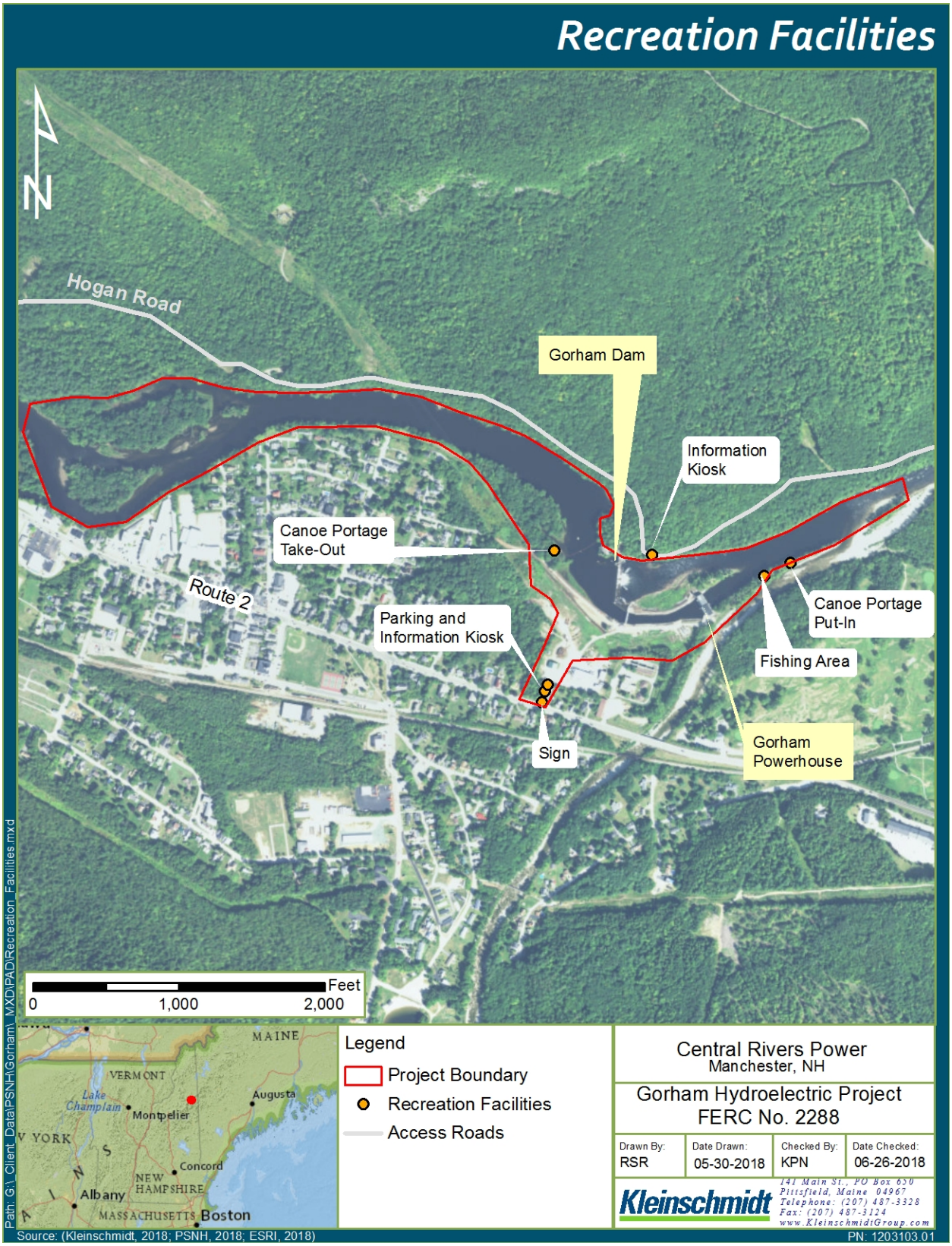


FIGURE 5-6 RECREATION FACILITIES AT THE GORHAM HYDROELECTRIC PROJECT.

CRP reports the number of recreation days at the Gorham project every six years in the FERC Form 80 Licensed Hydropower Development Recreation Report. The annual total recreation days were 977, 47, and 870 in 2003, 2009, and 2015, respectively (Table 5-20). Capacity utilization ranged from 15 percent to 25 percent (PSNH 2003, 2009; Eversource 2015). (Note: the numbers reported in Table 5-19 and Table 5-20 are not the same because they reflect different time periods and are estimated using different methods.)

TABLE 5-20 RECREATION DAYS* AND CAPACITY UTILIZATION FROM THE 2003, 2009, AND 2015 FERC FORM 80 REPORTS FOR THE GORHAM PROJECT.

	2003	2009	2015
Annual Total Recreation Days	977	47	870
Peak Weekend Average Recreation Days	20	125	8
Capacity Utilization (%)	25	20	15

*A recreation day is defined as each visit by a person to a development for recreational purposes during any portion of a 24-hour period.

5.14.3 REGIONAL RECREATION OPPORTUNITIES

The Gorham Project is located in the Great North Woods region of New Hampshire. This region is known for its open wilderness, hiking trails, mountain peaks, and scenic views. The town of Gorham often serves as a center point for accessing the many recreational opportunities throughout the region, including the Mount Washington Auto Road which begins in Gorham. The White Mountain National Forest and the Presidential Range of the White Mountains are located just south of Gorham, New Hampshire. State parks within the White Mountain National Forest include Mount Washington State Park, Crawford Notch State Park, and Franconia Notch State Park. Over 100 miles of the Appalachian Trail pass through the White Mountains (ATC 2018).

Popular destinations within approximately 30 miles of the Gorham Project include the New Hampshire towns of Littleton, Bethlehem, Jefferson, Lancaster, Conway, and Berlin, as well as Bethel, Maine. The 87-acre Moose Brook State Park is approximately 3 miles northwest of the Gorham Project; the park provides amenities for camping, swimming, fishing, hiking, biking, picnicking, scenic viewing, and snowshoeing (NHDCNR 2018a). Jericho Mountain State Park is approximately 9 miles northwest of the Gorham Project and provides opportunities for camping, hiking, boating, swimming, canoeing, fishing, horseback riding, picnicking, snowshoeing,

snowmobiling, and ATV riding (NHDCNR 2018b). In addition, several downhill skiing facilities are within a half-hour drive of Gorham including Wildcat Mountain, Attitash Mountain, Bretton Woods Mountain, and Sunday River (Recreation in Gorham, NH 2018).

5.14.4 RECREATION OPPORTUNITIES IN THE PROJECT VICINITY

A variety of recreation opportunities are available within the vicinity of the Gorham Project. Municipal recreation amenities are provided at the Gorham Common approximately 0.5 miles southwest of the project which provides recreation fields for softball, baseball, soccer, and tennis; a playground; a picnic area; and summer concerts. The Libby pool and recreation field are less than 1 mile south of the project. The Medallion Opera House provides concerts and theatrical performances (Recreation in Gorham, NH 2018). The Androscoggin Valley Country Club, which has an 18-hole golf course, is just south-southeast of the project. The White Birches Camping Park is 1.3 miles south-southeast in Shelburne, New Hampshire, and provides swimming, playground, trails, cabins, and RV and tent camping (White Birches 2018). Also, the Great Glen Trails Outdoor Center is 8 miles south of the project in the White Mountain National Forest and provides cross country skiing, rafting, kayaking, and mountain biking (GGT 2018).

Access to the Androscoggin River downstream of the Gorham Project is provided at a gravel boat launch approximately 2.5 river miles downstream in the Lead Mine State Forest off of Hogan Road (NHFG 2018). A hand-carry access area off of Route 2 provides access to the Reflection Pond upstream of the Shelburne dam. Access to the Androscoggin River is also available from a gravel hand carry boat access site approximately 2 river miles upstream of the Gorham Project (NHFG 2018).

5.14.5 REGIONAL NEEDS IDENTIFIED IN MANAGEMENT PLANS

The 2013-2018 New Hampshire Statewide Comprehensive Outdoor Recreation Plan (NH SCORP) serves to qualify New Hampshire for funding from the federal Land and Water Conservation Fund (LWCF) and provides guidance on prioritizing the allocation of LWCF grants. Goals of the NH SCORP include identifying outdoor recreation trends, needs, and issues; evaluating the supply and demand of recreation resources; and providing a strategic plan for addressing recreation issues in the state (NH DNCR 2013). The strategic priorities for the state of New Hampshire from the 2013-2018 SCORP are connecting people to the outdoors to promote healthy lifestyles, consistent and wise stewardship and conservation of natural resources,

economic vitality through the promotion of outdoor recreation and tourism, and education of recreation users, partners and agencies (NH DNCR 2013)

5.14.6 EXISTING SHORELINE MANAGEMENT POLICIES

PSNH adopted provisions from the New Hampshire Shoreland Water Quality Protection Act (SWQPA) to serve as the Shoreland Protection Plan for the Gorham Project (PSNH 1995; FERC 1999; NHDES 2017). Specifically, all land within 250-feet of the ordinary high water mark will be defined as protected shoreland with restrictions on the uses of that land, and land within a 150-foot buffer of the ordinary high water mark will be maintained as a natural woodland buffer (FERC 1999; NHDES 2017). CRP manages vegetation growth along the transmission line right-of-way to minimize adverse impacts to project facilities and aesthetics (FERC 1999; PSNH 1999). Furthermore, CRP conducts annual inspections of the shoreland to assess compliance with the SWQPA and whether any changes to the SWQPA impact the Gorham project. The annual shoreland inspections have not identified any violations of the SWQPA (e.g., Eversource Energy 2017).

5.14.7 NATIONAL AND STATE DESIGNATIONS

The Peabody River is listed on the Nationwide Rivers Inventory because of hydrologic values (i.e., located in a high mountain area and flows through Mount Washington) (NPS 2018a). The Appalachian Trail is designated a National Scenic Trail (NPS 2018b); sections of the trail in the White Mountain National Forest are within 5 miles of the Gorham Project. There are no project lands being considered for inclusion in the National Trail System or as a Wilderness Area.

5.14.8 LAND USES AND MANAGEMENT WITHIN THE VICINITY OF THE PROJECT

The dominant land cover class in the Peabody-Androscoggin watershed is deciduous forest (37.1 percent) followed by evergreen forest (27.8 percent), mixed forest (25.2 percent), developed land (2.8 percent), shrub/scrub (2.5 percent), and woody wetlands (1.6 percent) (Figure 5-7, Table 5-21). The area to the north of the project is primarily forest with pockets of shrub/scrub and agricultural land; the area is zoned for timber and agriculture (Figure 5-7, Figure 5-8). The land bordering the southern edge of the project boundary is developed and zoned for residential and commercial uses (Figure 5-7, Figure 5-8).

TABLE 5-21 LAND COVER IN THE PEABODY-ANDROSCOGGIN WATERSHED.

LAND COVER	SQUARE MILES	PERCENT
Open Water	0.8	0.5%
Developed, Open Space	2.2	1.4%
Developed	2.2	1.4%
Barren Land	2.0	1.3%
Deciduous Forest	57.3	37.1%
Evergreen Forest	43.0	27.8%
Mixed Forest	38.9	25.2%
Shrub, Scrub	3.8	2.5%
Grassland	1.0	0.7%
Agriculture	0.7	0.4%
Woody Wetlands	2.5	1.6%
Emergent Herbaceous Wetlands	0.2	0.1%
Total	155	

Source: MRLC 2018.

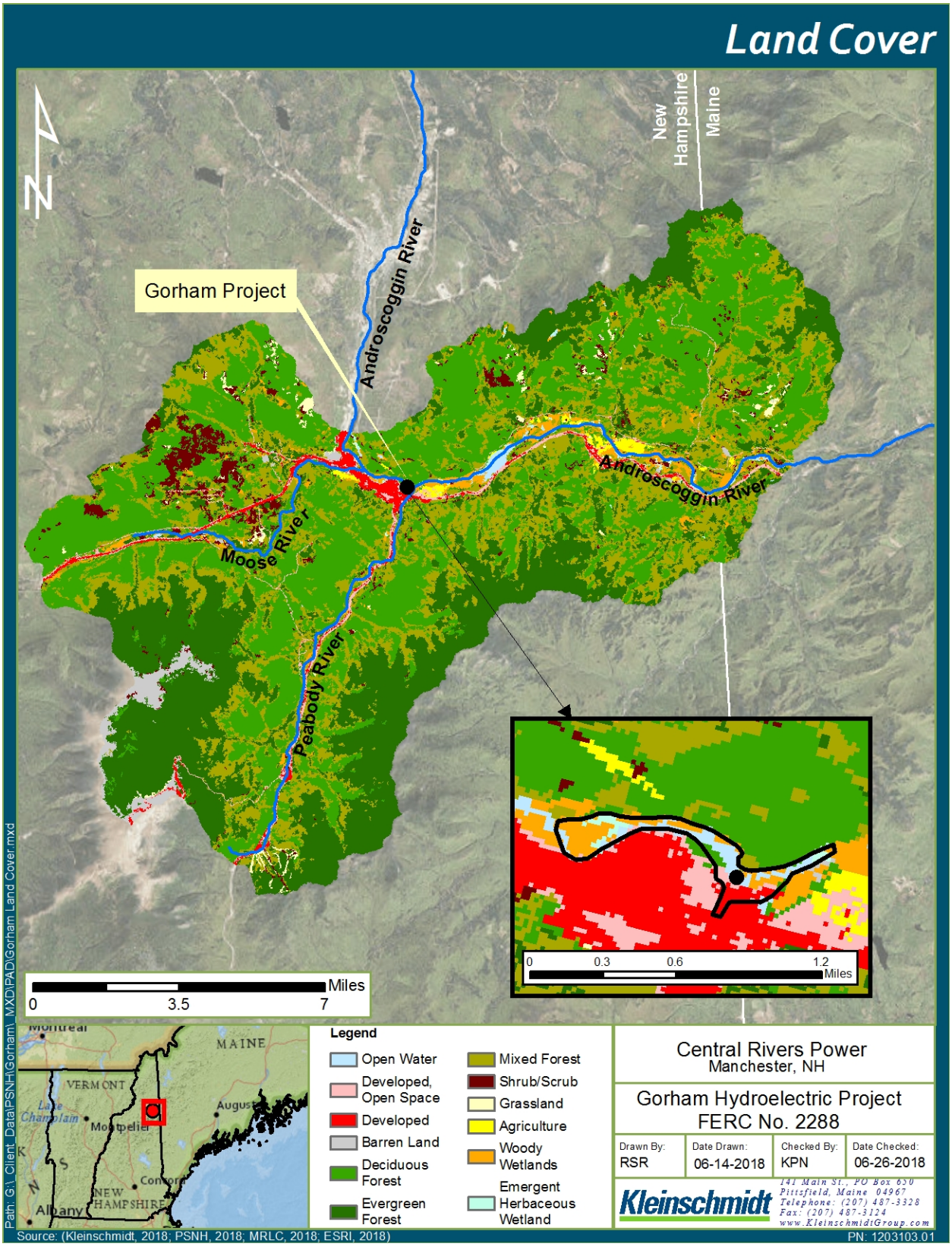


FIGURE 5-7 LAND COVER TYPES IN THE PEABODY-ANDROSCOGGIN WATERSHED.

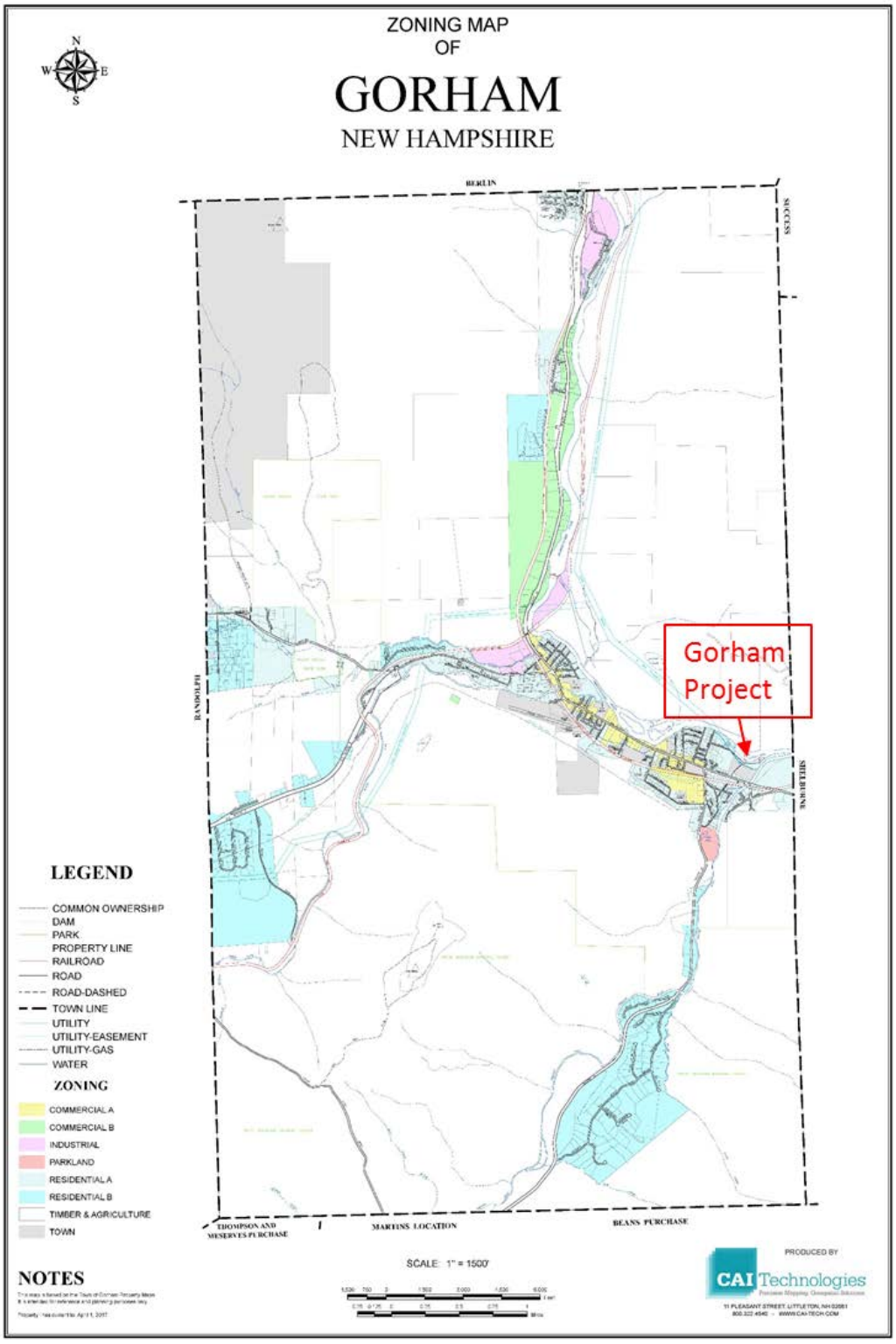


FIGURE 5-8 ZONING MAP FOR THE TOWN OF GORHAM, NEW HAMPSHIRE (TOWN OF GORHAM, NEW HAMPSHIRE 2018).

5.14.9 LAND USE AND MANAGEMENT OF PROJECT LANDS

Project operations and maintenance are the primary activities that occur on project lands.

5.14.10 REFERENCES

Appalachian Trail Conservancy (ATC). 2018. Explore by State. http://appalachiantrail.org/home/explore-the-trail/explore-by-state/new-hampshire. Accessed June 25, 2018.

Eversource Energy. 2015. FERC Form 80 Submittal. March 16, 2015.

Eversource Energy. 2017. Annual Shoreland Water Quality Protection Act (SWQPA) Review and Inspection. FERC Project No. 2287-NH, J. Brodie Smith and No. 2288-NH, Gorham. Filed December 8, 2017.

Federal Energy Regulatory Commission (FERC). 1995. Order Modifying and Approving Recreation Plan. Project No. 2288. 71 FERC ¶ 62,085. Issued May 1, 1995.

Federal Energy Regulatory Commission (FERC). 1999 Order Modifying and Approving Shoreland Protection Plan. Project No. 2288-015. 87 FERC ¶ 62,076. Issued· April 19, 1999.

Great Glen Trails (GGT). 2018. https://greatglentrails.com/. Accessed June 15, 2018.

Multi-Resolution Land Characteristics Consortium (MRLC). 2018. National Land Cover Database 2011. https://www.mrlc.gov/nlcd2011.php. Accessed June 14, 2018.

New Hampshire Department of Environmental Services (NHDES). 2017. Shoreland Program. https://www.des.nh.gov/organization/divisions/water/wetlands/cspa/index.htm. Accessed May 30, 2018.

New Hampshire Department of Natural and Cultural Resources (NH DNCR). 2013. 2013-2018 New Hampshire Statewide Outdoor Recreation Plan. http://www.nhstateparks.org/about-us/division/reports.aspx. Accessed June 15, 2018.

New Hampshire Department of Natural and Cultural Resources (NH DNCR). 2018a. New Hampshire State Parks Moose Brook State Park. https://www.nhstateparks.org/visit/state-parks/moose-brook-state-park.aspx. Accessed June 18, 2018.

New Hampshire Department of Natural and Cultural Resources (NH DNCR). 2018b. New Hampshire State Parks. Jericho Mountain State Park. https://www.nhstateparks.org/visit/state-parks/jericho-mountain-state-park.aspx. Accessed June 19, 2018.

New Hampshire Fish and Game (NHFG). 2018. NH Boating and Fishing Public Access Map. https://wildlife.state.nh.us/maps/boatfish/index.html. Accessed June 15, 2018.

National Park Service (NPS). 2018a. Nationwide Rivers Inventory- New Hampshire. https://www.nps.gov/subjects/rivers/new-hampshire.htm. Accessed June 15, 2018.

National Park Service (NPS). 2018b. National Scenic Trails. https://www.nps.gov/subjects/nationaltrailssystem/national-scenic-trails.htm. Accessed June 15, 2018.

Public Service of New Hampshire (PSNH). 1995. Final Shoreland Projection Plan Gorham Project. Project No. 2288. Filed July 31, 1995.

Public Service of New Hampshire (PSNH). 1999. Addendum to Shoreland Protection Plan FERC Project No. 2288. July 1, 1999.

Public Service of New Hampshire (PSNH). 2000. Recreation Usage Report. Gorham Hydroelectric Project. Project No. 2288-NH. Submitted August 15, 2000.

Public Service of New Hampshire (PSNH). 2003. FERC Form 80 Submittal. March 27, 2003.

Public Service of New Hampshire (PSNH). 2005. Recreation Usage Report. Gorham Hydroelectric Project. Project No. 2288-NH. Submitted May 2, 2005.

Public Service of New Hampshire (PSNH). 2009. FERC Form 80 Submittal. March 24, 2009.

Public Service of New Hampshire (PSNH). 2010. 2010 Recreational Usage Report for the Gorham Hydroelectric Project. Project No. 2288-NH. Submitted April 27, 2005.

Public Service of New Hampshire (PSNH). 2015. 2015 Recreational Usage Report for the Gorham Hydroelectric Project. Project No. 2288-NH. Submitted March 31, 2015.

Public Service of New Hampshire (PSNH). 2003. FERC Form 80 Submittal. March 27, 2003.

Recreation in Gorham, NH. 2018. http://www.gorhamnewhampshire.com/Recreation.html. Accessed June 21, 2018.

Town of Gorham, New Hampshire. 2018. Maps. http://www.gorhamnh.org/Pages/GorhamNH_Assessing/mapsfolder/maps. Accessed June 15, 2018.

White Birches Camping Park (White Birches). 2018. http://www.whitebirchescamping.com/. Accessed June 15, 2018.

5.15 AESTHETIC RESOURCES

5.15.1 VISUAL CHARACTER OF THE PROJECT LANDS AND WATERS

The Gorham Project is located within the Androscoggin River Valley in the town of Gorham, Coos County, New Hampshire. The Androscoggin River Valley is relatively narrow with steep adjacent upland areas (FERC 1993); within the reach between Berlin and Shelburne, New Hampshire, the width of the valley floor ranges from approximately 0.2 miles to 0.6 miles (FERC 1993). The western and southern edge of the river corridor between Berlin and Gorham is developed with industrial, commercial, and residential buildings; the northern and eastern shore of the river is forested.

The Gorham Project is several hundred feet from Route 2 and is generally not visible to passersby. The area between the project structures and Route 2 contains buildings for the Town of Gorham highway and water and sewer departments.

The Gorham Project consists of a 32-acre impoundment; a 417-foot long, 20-foot-high timber crib L-shaped dam with two spillway sections; a 75-foot long concrete sluiceway with a 15-foot wide sluice gate; a 415-foot long, 60-foot wide, 20-foot deep long earthen power canal; transmission lines; and a powerhouse. The shoreline of the impoundment consists of steep banks with bedrock outcrops and boulders (FERC 1993). The southern shoreline of the impoundment consists of riprap and has been filled for floodplain protection (FERC 1993). The northern portion of the impoundment splits around Buck Island and contains freshwater forested/shrub wetlands. Hogan Road parallels most of the northern side of the project but provides limited views of the project. In addition to views of the Androscoggin River, the Gorham Project provides scenic views of the Peabody River, mountains, forests, and a mature white birch stand downstream of the powerhouse (FERC 1993).

5.15.2 OTHER SCENIC ATTRACTIONS

The Gorham Project is situated in the Androscoggin River Valley between two of the most scenic regions of New Hampshire: The Great North Woods and the White Mountains. Scenic attractions near the Gorham Project include mountains, national and state forests, and national and state scenic byways. The following is a list of some scenic attractions near the Gorham Project:

- The Appalachian Trail is a National Scenic Trail (NPS 2018). Over 100 miles of the Appalachian Trail passes through the White Mountain National Forest and continues through Shelburne, New Hampshire, less than 5 miles from the Gorham Project (ATC 2018).
- The 100-mile White Mountain Trail is a designated National Scenic Byway and includes views of covered bridges, scenic overlooks, waterfalls, mountains, and historic sites (NHDOT 2015a; USDOT 2018).
- The 115-mile Presidential Range Trail passes through Gorham, New Hampshire, and is designated a New Hampshire Scenic and Cultural Byway. This trail provides views of the White Mountains and wildlife and provides access to state parks, state forests, and historic villages (NHDOT 2015b).
- The 100-mile Woodland Heritage Trail travels through Gorham, New Hampshire, and the northern section of the White Mountain National Forest; the trail is designated a New Hampshire Scenic and Cultural Byway (NHDOT 2015c). The trail provides access to state parks, state forests, historic sites, and covered bridges.
- The 98-mile Moose Path Trail is a designated New Hampshire Scenic and Cultural Byway and provides access to historic sites, hiking, campgrounds, and state parks (NHDOT 2015d). This is the path used by the Gorham Moose Tours which begin in Gorham, New Hampshire, and provide wildlife viewing tours throughout northern New Hampshire.

5.15.3 REFERENCES

Appalachian Trail Conservancy (ATC). 2018. Explore by State. http://appalachiantrail.org/home/explore-the-trail/explore-by-state/new-hampshire. Accessed June 25, 2018.

Federal Energy Regulatory Commission (FERC). 1993. Final Environmental Impact Statement. Upper Androscoggin River Basin Hydroelectric Projects (FERC 2422-004, 2287-003, 2326-002, 2327-002, 2311-001, 2288-004, 2300-002). November 1993.

New Hampshire Department of Transportation (NHDOT). 2015a. Scenic and Cultural Byways White Mountain Trail National Scenic Byway. https://www.nh.gov/dot/programs/scbp/tours/whitemtn.htm. Accessed: June 21, 2018.

New Hampshire Department of Transportation (NHDOT). 2015b. Scenic and Cultural Byways Presidential Range Trail. https://www.nh.gov/dot/programs/scbp/tours/president.htm. Accessed: June 21, 2018.

New Hampshire Department of Transportation (NHDOT). 2015c. Scenic and Cultural Byways Woodland Heritage Trail. https://www.nh.gov/dot/programs/scbp/tours/woodland.htm. Accessed: June 21, 2018.

New Hampshire Department of Transportation (NHDOT). 2015d. Scenic and Cultural Byways the Moose Path Trail. https://www.nh.gov/dot/programs/scbp/tours/moosepath.htm. Accessed: June 21, 2018.

U.S. Department of Transportation Federal Highway Administration (USDOT FHA 2018). America's Byways White Mountain Trail. https://www.fhwa.dot.gov/byways/byways/2256. Accessed June 21, 2018.

National Park Service (NPS). 2018. National Scenic Trails. https://www.nps.gov/subjects/nationaltrailssystem/national-scenic-trails.htm. Accessed June 21, 2018.

5.16 CULTURAL RESOURCES

5.16.1 SUMMARY

A brief summary of both the prehistory and history of the region is presented here. Humans first came to the region during the Paleoindian period, ca 9000- 7000 B.C., although there are few remains in the area. Evidence of successive hunter-gather Archaic populations, ca 7000 -1000 B.C., are more common. The Androscoggin River was likely a travel route from these early periods through the Woodland period (1,000 to 1,500 AD). There are several landforms in the area that are likely to have a potential for cultural resources given that flat areas with easy access to water where needed for encampments and activities like tool making. In addition, areas near stream confluences and rapids were used for portage (FERC 1993).

The first Europeans settled in New Hampshire in the 1600s and the first permanent European settlement was established in 1623 by David Thomson (New Hampshire Historical Society 2018). The same landforms that appealed to the Native Americans appealed to the European settlers and as the European population grew and there was in increase in commercial and industrial development, many prehistoric sites were damaged. In addition, shoreline erosion marred prehistoric sites in the area (FERC 1993). There are no remaining federal tribes in the state (PSNH 1996).

By the time Gorham was incorporated in 1836, there were few Native Americans left in the area. Around 1851, Gorham experienced rapid growth as a result of the arrival of the Atlantic and St. Lawrence Railway. The railway helped people travel between Portland and Montreal and several hotels were constructed as tourism in the area grew. In 1879, a fire destroyed almost a third of the town center, which residents work quickly to rebuild. The town continued to grow with the addition of the library (1886), kerosene streetlights (1887), and the Berlin Street Railway (1901) which tied Berlin and Gorham together economically. Gorham continued to industrialize during World War 1 and World War 2 and as automobiles replaced the train and rail system, tourism became geared to shorter stays (Gosselin 2018).

5.16.2 GORHAM PROJECT

The first part of the existing Gorham powerhouse was built in 1909. Additional parts of the Gorham Project were built from 1917 to 1923 in stages by the Twin State Gas and Electric Company. In addition, the dam was enlarged several times, in 1903, 1927-1928, and 1958-1959. The Gorham Project was acquired by PSNH in 1943 (PSNH 1996).

In 1991, Justine Gengras and Dr. Charles Bolian conducted a Phase 1 archeological study of the Gorham Project vicinity. While, they did not identify any prehistoric resources, they did identify two historic sites in the Gorham Project boundary. The Eddy Bridge site is comprised of abutments for an 1877-1921 suspension bridge and the Logging Boom site contains logging cribs and boom. Both sites are continuously inundated and not affected by normal Gorham Project operations. In addition, to the Eddy Bridge and Logging Boom site, Gengras and Bolian noted that some terrace areas and Buck Island near the Gorham Project may have a potential for prehistoric resource sensitivity (PSNH 1996).

In 1992, Ronald Tetu evaluated the Gorham Project for the potential eligibility to be listed on the National Register of Historic Places (NRHP). While the facility was greater than 50 years of age, it does not retain the integrity needed for listing due to the extensive redevelopment of the Gorham Project. The New Hampshire State Historic Preservation Office (SHPO) noted in a letter dated August 3, 1992 that the Gorham Project is "of historic interest" (PSNH 1996).

Article 407 of the 1994 License order provides for a "Programmatic Agreement Among the Federal Energy Regulatory Commission, the Advisory Council on Historic Preservation, and the New Hampshire Division for Historic Preservation, for Managing Historic Properties Likely to be Affected by Continuing to Operate the Sawmill Project, Project No. 2422, Cross Power Project, Project No. 2326, Cascade Project, Project No. 2327, Gorham Project, Project No. 2311, Shelburne Project, Project No. 2300, J. Brodie Smith Project, Project No. 2287, and Gorham Project No. 2288, All Located on the Androscoggin River" (Programmatic Agreement) as executed in November 1993. Among other things this Programmatic Agreement provides for a Cultural Resources Management Plan, which was developed by PSNH in 1996 and includes a provision for an annual report to FERC and SHPO regarding any activities at the project associated with construction or ground disturbance.

5.16.3 REFERENCES

Federal Energy Regulatory Commission. 1993. Final Environmental Impact Statement. Federal Energy Regulatory Commission, Washington, D.C.

Federal Energy Regulatory Commission. 1994. Order Issuing New License. Federal Energy Regulatory Commission, Washington, D.C.

Gosselin, Guy. 2018. Some Highlights of Gorham's History. Available at: https://web.archive.org/web/20120914093814/http://www.gorhamnh.org/Pages/GorhamNH_WebDocs/history.pdf. Accessed June 6, 2018.

New Hampshire Historical Society. 2018. Timeline of New Hampshire History. Available at: https://www.nhhistory.org/Timeline. Accessed on June 6, 2018.

Public Service Company of New Hampshire (PSNH). 1996. Cultural Resource Management Plan for the Gorham Hydroelectric Facility, in Gorham Township, Coos County, New Hampshire. Santa Fe, NM 87505.

5.17 SOCIO-ECONOMIC RESOURCES

The Gorham Dam is located on the Androscoggin River in Coos County, New Hampshire. It is located just outside the City of Gorham, which has a population of 2,848. Coos County is the northernmost county in the state, as well as the largest at 1,800-square-miles. The county's population was estimated to be 32,039 in 2016, representing a 3.1% decrease from the 2010 census, compared to a 1.4% increase statewide during that period (United States Census Bureau 2017a).

Coos County's estimated median household income for 2012-2016 was $45,154 (in 2016 dollars), and the poverty rate was 13.8% (United States Census Bureau 2017a). It is amongst the counties with the highest poverty rate in New Hampshire; 2017 was the first year in three years during which it was not ranked as the county with the highest poverty rate in the state (Bookman 2017). The county's percentage of high school graduates for the years 2012-2016 was 87.9% (Data USA).

The economy of Coos County is highly dependent on agriculture, forestry, fishing, and hunting; utilities; and accommodation and food service, much more so than most counties of its size. The largest industries are healthcare and social assistance, retail trade, and accommodation and food service (Data USA).

The 2012 Census of Agriculture shows that the amount of land in agriculture in Coos County increased between 2007 and 2012 by 12%, with the land in farms rising from 50,895 acres in 2007 to 56,797 acres in 2012. In 2012, approximately 5% of the county was comprised of farms. The increase in farmland was accompanied by an increase of 9% in the total market value of crops and livestock sold; however, the average value of products sold per farm decreased by 2% (Census of Agriculture 2012).

Population statistics for Coos County and New Hampshire can be found in the table below:

TABLE 5-22 POPULATION STATISTICS FOR COOS COUNTY AND NEW HAMPSHIRE

	COOS COUNTY	NEW HAMPSHIRE
Population		
Population (2017 estimate)	31,634	1,342,795
Population (2010)	33,052	1,316,460

	COOS COUNTY	NEW HAMPSHIRE
Population Growth (2010 to 2017)	-4.3%	2.0%
Geography (2010)		
Land area in square miles	1,794.69	8,952.65
Population per square mile	18.4	147.0
Gender (2017)		
Male	53.0%	49.5%
Female	47.0%	50.5%
Age (2017)		
Persons under 5 years old	4.0%	4.8%
Persons under 18 years old	16.7%	19.5%
Persons 65 years old and over	22.5%	17.0%
Race and Hispanic Origin (2017)		
White	96.5%	93.8%
Black or African American	0.9%	1.5%
American Indian and Alaska Native	0.4%	0.3%
Asian	0.6%	2.7%
Native Hawaiian and Other Pacific Islander	Z	0.1%
Two or more races	1.5%	1.7%
Hispanic or Latino	1.9%	3.5%
White, not Hispanic or Latino	95.0%	90.8%

Sources: United States Census Bureau 2017a, 2017b

5.17.1 REFERENCES

Bookman, Todd. 2017. *Data: Coos County No Longer Has Highest Poverty Rate in N.H.* [Online] http://nhpr.org/post/data-coos-county-no-longer-has-highest-poverty-rate-nh#stream/0. Accessed July 20, 2018.

Census of Agriculture. 2012. *Coos County, New Hampshire.* [Online] https://www.agcensus.usda.gov/Publications/2012/Online_Resources/County_Profiles/New_Hampshire/cp33007.pdf. Accessed July 20, 2018.

DataUSA. *Coos County, NH.* [Online] https://datausa.io/profile/geo/coos-county-nh/. Accessed July 20, 2018.

United States Census Bureau. (2017a). *QuickFacts: Coos County, New Hampshire.* [Online] https://www.census.gov/quickfacts/fact/table/cooscountynewhampshire/PST045217. Accessed July 20, 2018.

United States Census Bureau. (2017b). *QuickFacts: New Hampshire.* [Online] https://www.census.gov/quickfacts/NH. Accessed July 20, 2018.

5.18 TRIBAL RESOURCES

CRP is not aware that the Project affects any Native American tribes. There are no Native American lands, known Native American traditional cultural properties or religious properties, or National Register-eligible or -listed sites associated with Native American Nations within the Project boundary. The following are Native American tribes and intertribal organizations that may be interested in the Project area or surrounding area:

Abenaki Nation of New Hampshire
Rhonda Besaw, Speaker
262 Lancaster Rd
Whitefield NH 03598
TEL 603-837-3381
Kcicasco@aol.com

Cowasuck Band – Pennacook/Abenaki People
Paul Pouliot, Council Chief and Speaker
COWASS North America, Inc.
Cowasuck Band of the Pennacook - Abenaki People
P.O. Box 52
840 Suncook Valley Road (Route 28)
Alton, NH 03809-0052
TEL: 603) 776-1090
FAX: 603) 776-1091
cowasuck@cowasuck.org
www.cowasuck.org

Koasek Abenaki of the Koas
Council of Chiefs : Amy Therrian, Carrie Gendreau, John Prescott, Shirly Hook
Koasek of the Koas
Box 42
Newbury, Vt. 05051
www.koasekofthekoas.org
www.voicesofthekoas.com

Koasek Traditional Abenaki Nation
Chiefs Paul Bunnell and Nathan Pero
PO Box 147
Post Mills, VT 05058-0147
bunnellloyalist@aol.com
www.cowasuckabenaki.com

Nulhegan Band of the Coosuk - Abenaki Nation
Don Stevens, Chief
156 Bacon Drive

Eastern Pequot Reservation
Eastern Area Office
Roy Sebastian, Chairperson
North Stonington, CT 06359

Golden Hill Indian Reservation
Golden Hill Paugussett 3 Chief Government
Moonface Bear, Leader
95 Stanavage Rd.
Trumbull, CT 06415
(203) 377-4410 phone
(203) 738-2051 fax

Paucatuck Eastern Pequot Tribe
Eastern Area Office
Roy Sebastian, Chairperson
935 Lantern Hill Rd.
Ledyard, CT 06339

Schaghticaoke Tribal Nation of Kent
Schaghticoke Tribal Council
Richard Velky, Chairperson
605 Main St.
Monroe, CT 06468
(203) 459-2531 phone
(201) 459-2535 fax

Laconia Indian Historical Association
Cliff Williamson, President
P.O. Box 224
Tilton, NH 03276
603-934-4819 (Gerald Dulac, Land Trust)

NH Intertribal Native American Council
Peter Newell, Council Chief
9 Durrell Mountain Road
Belmont NH 03220

Shelburne VT 05482
Tel: (802) 985-2465
www.abenakitribe.org
Vermont State Recognized Tribe

Sovereign Abenaki Nation of Missisquoi
St. Francis/Sokoki Band
Chief Eugene Rich
Debra Bergeron, Repatriation Coordinator
PO Box 276
100 Grand Avenue
Swanton, VT05488
TEL 802-868-2559
FAX 802-868-5118
SOGOMO@COMCAST.NET

6.0 PROJECT EFFECTS, ISSUES, STUDIES, MEASURES, AND PLANS

6.1 KNOWN OR POTENTIAL PROJECT EFFECTS

This section identifies any known or likely effects of licensing the continued operation of the existing Project. For the purposes of this PAD, Project effects are any new changes to the natural and human environment attributable to licensing the continued operation of the Project.

6.1.1 PRIMARY PROJECT EFFECTS

FERC issued a new license for the Gorham Project in 1994. The license provides for the operation of the Project and to serve as a generation facility. run-of-river with minimal impoundment fluctuations. Article 402 of the existing license requires there be a minimum flow release of 200 cfs from the Gorham dam at all times.

6.2 PRELIMINARY ISSUES, STUDIES, AND MEASURES BY RESOURCE

This section identifies issues associated with the potential effects of relicensing continued Project operations, initial study proposals based upon these issues, and current and proposed protection, mitigation, and enhancement (PM&E) measures by the Licensee to address these issues. This includes:

Potential Issues – Identification of issues is a key step in the relicensing process because any specific concerns or questions arising from the proposed continued Project operations may need to be addressed in the context of the relicensing proceeding. The Licensee has attempted to identify all of the issues that have a nexus to licensing continued Project operations.

Proposed Study Plans – Where noted, the Licensee has included summaries for specific studies that it anticipates will be undertaken. The Licensee will file the formal "Study Plan" in accordance with 18 CFR §5.11 within 45 days following the deadline for filing comments on the PAD and the issuance of a Scoping Document by FERC. Regardless, the Licensee may agree to certain studies and information gathering activities prior to the formal filing and may voluntarily initiate those activities or studies prior to the formal filing. The Licensee understands that FERC's Scoping meetings and additional comments by resource agencies, tribes, or the public may alter suggested studies or require additional studies. Any information or study requests must comply with the requirements of 18 CFR §5.9(b).

Continued or Proposed PM&E Measures – The issues identified for each resource area may or may not ultimately warrant specific PM&E measures or may already be addressed through PM&E measures required by the existing Project license or undertaken voluntarily by the Licensee. Existing relevant information and additional information obtained through studies will be used to determine if additional PM&E measures are needed.

6.2.1 GEOLOGY AND SOILS

6.2.1.1 POTENTIAL ISSUES AND PROJECT EFFECTS

The vast majority of the shoreline within the Project boundary is forested or adjacent to developed lands (Section 5.8), which limited erosion. As outlined in the Section 5.1, soils within the Project range from moderately low to moderate erodibility. There may be limited amounts of localized erosion, but if present, the extent of such shoreline erosion is unknown. In addition, in 1999 FERC approved a Shoreland Protection Plan for the Gorham Project. The Licensee files annually a shoreline inspection report for the upstream and downstream shoreline areas of the Project boundary. To date, no changes have occurred nor violations to the Shoreland Protection Act have been observed.

6.2.1.2 PROPOSED STUDIES

No studies are being proposed specific to geologic or soil resource. Observations of the condition of the shoreline relative to project-induced erosion will be made during the conduct of other reconnaissance surveys for the relicensing. Any areas of possible project-induced erosion will be identified and addressed as necessary during relicensing.

6.2.1.3 CONTINUED OR PROPOSED PM&E MEASURES

A Shoreland Protection Plan is currently in place relative to geologic or soil resources. If significant areas of localized erosion resulting from project operations are discovered during the course of normal operation, these can be addressed through site appropriate measures at the time under the license.

6.2.2 WATER RESOURCES

6.2.2.1 POTENTIAL ISSUES AND PROJECT EFFECTS

Historical data indicates that water quality conditions upstream and downstream of the Project meet state standards and it is not anticipated that operations adversely affect water quality. However, since existing data does not include some areas of Project waters, CRP proposes to supplement the data with riverine water quality sampling as outlined below.

6.2.2.2 PROPOSED STUDIES

The Gorham Project impoundment is riverine in nature and is relatively shallow (maximum depth of approximately 10-15 feet). Licensee proposes to conduct baseline water quality sampling employing a typical riverine sampling approach of early morning/late afternoon DO, temperature and Chlorophyll a sampling during a three-day period of high temperature and low flow conditions in the summer, in the impoundment and downstream of the dam.

6.2.2.3 CONTINUED OR PROPOSED PM&E MEASURES

No specific PM&E measures are proposed beyond continuing run of river operation and release of appropriate bypass flows.

6.2.3 FISH AND AQUATIC RESOURCES (INCLUDING RELATED RT&E AND RIPARIAN, WETLAND AND LITTORAL HABITAT RESOURCES)

Currently, the fishery in the upper Androscoggin River is a mix of naturally occurring and stocked species. Stocking and fishing regulations are the main drivers controlling fish populations on the upper Androscoggin River. The Midwest Biodiversity Institute (MBI) sampled the Androscoggin River in 2003 to document the fish assemblage and develop a database for the distribution and abundance of fishes. Riverine segments in the upper Androscoggin River had higher densities of fish as compared to downstream impounded areas.

MBI electrofished several reaches around the Gorham Project. MBI did not capture any brook trout in 2003 and attributed this to high water temperatures during the study period. However, downstream of the project, native brook trout are well established in tributaries between Gilead and Bethel, ME (approximately 12 RM downstream of the project) and are seasonally present in the Androscoggin River along this downstream reach. Trout have not been stocked near the Gorham Project since 1991. Trout stocking in the upstream portions of the river above Berlin,

New Hampshire has steadily increased since the mid-1990s; several large tributaries in New Hampshire are continually stocked with brown and rainbow trout. The Maine Department of Inland Fisheries and Wildlife (MDIFW) reports that landlocked salmon stocking between Gilead and Rumford Falls has increased since 2005. Stocking of salmon before 2005 in this reach of the Androscoggin was approximately 1,350 fish annually.

The Gorham Project is approximately 68 RM upstream of Lewiston Falls, which is the natural upstream migration limit for most diadromous species on the Androscoggin River.

CRP is not proposing any changes to its current operations for the next license term; therefore, continued operations are expected to provide and maintain aquatic habitats in support of the existing fish and aquatic species in the Project area that have developed over many years of operation.

6.2.3.1 PROPOSED STUDIES

No studies are being proposed at this time.

6.2.3.2 CONTINUED OR PROPOSED PM&E MEASURES

Licensee is proposing to continue to operate in a run of river mode and provide a 200 cfs bypass flow release.

6.2.4 WILDLIFE RESOURCES (INCLUDING RELATED RT&E AND RIPARIAN, WETLAND AND LITTORAL HABITAT RESOURCES)

6.2.4.1 POTENTIAL ISSUES AND PROJECT EFFECTS

Through initial research reviews, no significant wildlife habitats or rare and exemplary natural wildlife communities were found within the Project areas. Licensing the continued operation of the Project is not anticipated to adversely affect wildlife or habitat.

6.2.4.2 PROPOSED STUDIES

No studies are being proposed at this time.

6.2.5 BOTANICAL RESOURCES (INCLUDING RELATED RT&E AND RIPARIAN, WETLAND AND LITTORAL HABITAT RESOURCES)

6.2.5.1 POTENTIAL ISSUES AND PROJECT EFFECTS

A sugar maple - silver maple - white ash floodplain forest near Gorham has been identified. The plant communities that currently exist within the Project boundaries have become established under the existing operating regime that has existed for many years since the Projects were constructed. Therefore, it is anticipated that continued operations will not result in adverse effects on wetland and botanical resources. Reconnaissance level verification will be conducted to confirm location of these species.

6.2.5.2 PROPOSED STUDIES

The Licensee proposes to conduct reconnaissance level surveys to document the botanical resources along the Project Boundaries and to search for rare, threatened or endangered species. This survey will include documentation of invasive vegetation species and location of existing erosion within vegetation communities, if there is any.

6.2.5.3 CONTINUED OR PROPOSED PM&E MEASURES

There are no existing PM&E measures in-place specific to wetland and botanical resources, and none are proposed. Licensee is proposing to continue to operate in a run of river mode and provide a 200 cfs bypass flow release.

6.2.6 RECREATION AND LAND USE

6.2.6.1 POTENTIAL ISSUES AND PROJECT EFFECTS

The Gorham Project, operating in accordance with the current FERC license operates in a run-of-river mode. Historic Form 80 monitoring indicates that existing facilities are adequate for the level of use observed at project recreation facilities (e.g., the canoe portage and fishing access).

6.2.6.2 PROPOSED STUDIES

No studies are being proposed at this time. However, CRP anticipates participation of the surrounding municipalities in the licensing process and consultation efforts relative to recreational resources at the Project.

6.2.6.3 CONTINUED OR PROPOSED PM&E MEASURES

The Licensee will continue to provide for public access and use of Project lands and waters as appropriate and consistent with Project purposes. The Licensee also will continue to provide and maintain the canoe portage trail, and angler access that are Project related.

6.2.7 AESTHETIC RESOURCES

6.2.7.1 POTENTIAL ISSUES AND PROJECT EFFECT

No issues have been identified relative to aesthetic resources.

6.2.7.2 PROPOSED STUDIES

No studies are being proposed at this time.

6.2.7.3 CONTINUED OR PROPOSED PM&E MEASURES

No measures have been identified and none are proposed.

6.2.8 CULTURAL RESOURCE ISSUES

6.2.8.1 POTENTIAL ISSUES AND PROJECT EFFECTS

Project operations could potentially affect cultural resources if water levels result in significant erosion and the exposure of resources of significance. Ground disturbances associated with activities such as land-clearing or construction activities can also expose culturally significant resources, making them susceptible to alteration, damage, and theft/vandalism. A Phase 1 archeological study was conducted in 1991 of the Gorham Project vicinity. Although, prehistoric resources were not identified, two historic sites in the Gorham Project boundary were located, including the Eddy Bridge and the Logging Boom. Both sites are continuously inundated and not affected by normal Gorham Project operations. In 1992, the Gorham Project was evaluated for the potential eligibility to be listed on the NRHP. While the facility was greater than 50 years of age, it does not retain the integrity needed for listing due to the extensive redevelopment of the Gorham Project. The New Hampshire State Historic Preservation Office (SHPO) noted in a letter dated August 3, 1992 that the Gorham Project is “of historic interest”.

The proposed relicensing of the Project anticipates that the Project will be operated without significant changes to its facilities or operations. If changes to the Project are found to be

necessary during relicensing or after a license has been issued, then the Licensee would consult with the SHPO before beginning any land-clearing or land-disturbing activities within the Project boundaries. The consultation will determine the need to conduct archeological or historical survey(s) and to implement further avoidance or mitigation measures before undertaking the action.

6.2.8.2 PROPOSED STUDIES

The Licensee will consult with the SHPO regarding potential need, or lack of, archaeological surveys in connection with the Project relicensing.

6.2.8.3 CONTINUED OR PROPOSED PM&E MEASURES

The need for any PM&E measures will be determined in consultation with SHPO during the relicensing process.

6.2.9 SOCIOECONOMIC RESOURCES

6.2.9.1 POTENTIAL ISSUES AND PROJECT EFFECTS

No issues have been identified relative to socioeconomic resources.

6.2.9.2 PROPOSED STUDIES

No studies are proposed at this time.

6.2.9.3 CONTINUED OR PROPOSED PM&E MEASURES

No measures have been identified and none are proposed at this time.

6.2.10 TRIBAL RESOURCES

6.2.10.1 POTENTIAL ISSUES AND PROJECT EFFECTS

CRP is not aware that the Project affects any Native American tribes. There are no Native American lands, known Native American traditional cultural properties or religious properties, or National Register-eligible or -listed sites associated with Native American Nations within the Project boundary.

6.2.10.2 PROPOSED STUDIES

No Studies are proposed.

6.2.10.3 CONTINUED OR PROPOSED PM&E MEASURES

No measures have been identified and none are proposed.

6.3 POTENTIALLY RELEVANT QUALIFYING FEDERAL AND STATE OR TRIBAL COMPREHENSIVE WATERWAY PLANS

Section 10(a) of the Federal Power Act (FPA), 16 U.S.C. § 803(a)(2)(A), requires FERC to consider the extent to which a Project is consistent with Federal or state comprehensive plans for improving, developing, or conserving a waterway or waterways affected by the Project. On April 27, 1988, FERC issued Order No. 481-A, revising Order No. 481, issued October 26, 1987, establishing that FERC 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, the data, and the methodology used.
- Is filed with the Secretary of the Commission.

FERC currently lists comprehensive plans for the State of New Hampshire and U.S. resources. Of these listed plans, 5 are potentially relevant to the Project, as listed below in Table 6-1.

These plans may be useful in the relicensing proceeding for characterizing desired conditions.

TABLE 6-1 LIST OF QUALIFYING FEDERAL AND STATE COMPREHENSIVE WATERWAY PLANS POTENTIALLY RELEVANT TO THE GORHAM PROJECT

RESOURCE	COMPREHENSIVE PLAN
National Oceanic and Atmospheric Administration, Office of Ocean and Coastal Resource Management	National Oceanic and Atmospheric Administration, Office of Ocean and Coastal Resource Management. New Hampshire Office of State Planning. 1988. New Hampshire coastal program and final environmental impact statement. Washington, D.C. July 1988.
National Park Service	National Park Service. The Nationwide Rivers Inventory. Department of the Interior, Washington, D.C. 1993.
New Hampshire Office of State Planning	New Hampshire Office of State Planning. 1977. Wild, scenic, & recreational rivers for New Hampshire. Concord, New Hampshire. June 1977.
U.S. Fish and Wildlife Service	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, Massachusetts. May 1989.
U.S. Fish and Wildlife Service	U.S. Fish and Wildlife Service. n.d. Fisheries USA: the recreational fisheries policy of the U.S. Fish and Wildlife Service. Washington, D.C.

6.4 POTENTIALLY RELEVANT RESOURCE MANAGEMENT PLANS

In addition to the qualifying Federal, state, and Tribal comprehensive waterway plans listed in Section 6.0, some resource agencies have developed resource management plans to help guide their actions regarding specific resources of jurisdiction. The resource management plans listed in Table 6-2 may be relevant to the Project and may be useful in the relicensing proceeding for characterizing desired conditions.

TABLE 6-2 LIST OF RELEVANT RESOURCE MANAGEMENT PLANS POTENTIALLY RELEVANT TO THE GORHAM PROJECT.

RESOURCE	RESOURCE MANAGEMENT PLAN
Atlantic States Marine Fisheries Commission	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.
Atlantic States Marine Fisheries Commission	Atlantic States Marine Fisheries Commission. 1998. Interstate fishery management plan for Atlantic striped bass. (Report No. 34). January 1998.
Atlantic States Marine Fisheries Commission	Atlantic States Marine Fisheries Commission. 1999. Amendment 1 to the Interstate Fishery Management Plan for shad and river herring. (Report No. 35). April 1999.
Atlantic States Marine Fisheries Commission	Atlantic States Marine Fisheries Commission. 2000. Interstate Fishery Management Plan for American eel (Anguilla rostrata). (Report No. 36). April 2000.
Atlantic States Marine Fisheries Commission	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.
Atlantic States Marine Fisheries Commission	Atlantic States Marine Fisheries Commission. 2008. Amendment 2 to the Interstate Fishery Management Plan for American eel. Arlington, Virginia. October 2008.
Atlantic States Marine Fisheries Commission	Atlantic States Marine Fisheries Commission. 2009. Amendment 2 to the Interstate Fishery Management Plan for shad and river herring, Arlington, Virginia. May 2009.
Atlantic States Marine Fisheries Commission	Atlantic States Marine Fisheries Commission. 2010. Amendment 3 to the Interstate Fishery Management Plan for shad and river herring, Arlington, Virginia. February 2010.

RESOURCE	RESOURCE MANAGEMENT PLAN
Atlantic States Marine Fisheries Commission	Atlantic States Marine Fisheries Commission. 2013. Amendment 3 to the Interstate Fishery Management Plan for American eel. Arlington, Virginia. August 2013.
Atlantic States Marine Fisheries Commission	Atlantic States Marine Fisheries Commission. 2014. Amendment 4 to the Interstate Fishery Management Plan for American eel. Arlington, Virginia. October 2014.
National Marine Fisheries Service	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.
New Hampshire Office of State Planning	New Hampshire Office of State Planning. 1989. New Hampshire wetlands priority conservation plan. Concord, New Hampshire.
New Hampshire Office of Energy and Planning	New Hampshire Office of Energy and Planning. New Hampshire Statewide Comprehensive Outdoor Recreation Plan (SCORP): 2008-2013. Concord, New Hampshire. December 2007.
New Hampshire Office of State Planning	New Hampshire Office of State Planning. 1991. Public access plan for New Hampshire's lakes, ponds, and rivers. Concord, New Hampshire. November 1991.
State of New Hampshire	State of New Hampshire. 1991. New Hampshire rivers management and protection program [as compiled from NH RSA Ch. 483, HB 1432-FN (1990) and HB 674-FN (1991)]. Concord, New Hampshire.

Federal Energy Regulatory Commission. 2012. List of Comprehensive Plans. January 2018. [Online] URL: http://www.ferc.gov/industries/hydropower/geninfo/licensing/complan.pdf. Accessed August 3, 2018.

7.0 LITERATURE AND EXISTING INFORMATION SOURCES CITED IN THE DESCRITPIONS AND SUMMARIES OF EXISTING RESOURCE DATA

Appalachian Mountain Club (AMC). 2013. Ecological Atlas of the Upper Androscoggin River Watershed. Published by the Appalachian Mountain Club, Gorham, NH.

Appalachian Trail Conservancy (ATC). 2018. Explore by State. http://appalachiantrail.org/home/explore-the-trail/explore-by-state/new-hampshire. Accessed June 25, 2018.

Billings, Marland P. (1980.) The geology of New Hampshire: Part II, bedrock geology. Concord, NH: Division of Forests and Lands, Department of Resources and Economic Development. Available at https://www.des.nh.gov/organization/commissioner/pip/publications/geologic/documents/geologyofnh2.pdf

Bookman, Todd. 2017. *Data: Coos County No Longer Has Highest Poverty Rate in N.H.* [Online]http://nhpr.org/post/data-coos-county-no-longer-has-highest-poverty-rate-nh#stream/0

Boucher, D.P. 1997. "Fishery Progress Report No. 97-4, Androscoggin River Survey (New Hampshire to Rumford Falls)." *Maine Department of Inland Fisheries and Wildlife.* Augusta, Maine. 7pp.

Brautigam, Francis., Pellerin, James. 2014. "Upper Androscoggin River Fishery Management Plan." *Maine Department of Inland Fisheries and Wildlife.* Division of Fisheries and Hatcheries.

Brown, Michael E., Maclaine, John., Flagg, Lewis. 2006. Androscoggin river anadromous fish restoration program. Maine Department of Marine Resources, Stock Enhancement Division, Project Number AFC-37. Report to the National Marine Fisheries Service. 94 pp.

Census of Agriculture. 2012. *Coos County, New Hampshire.* [Online]https://www.agcensus.usda.gov/Publications/2012/Online_Resources/County_Profiles/New_Hampshire/cp33007.pdf

Commission for Environmental Cooperation (CEC). 2011. North American Terrestrial Ecoregions: Level III. Published by the Commission for Environmental Cooperation. Montreal, Quebec, CA.

Cowardin, L.M., V. Carter V., F.C. Golet, E.T. LaRoe. 1979. Classification of Wetlands and Deepwater Habitats of the United States. U.S. Fish and Wildlife Service Report No. FWS/OBS/-79/31.Washington, D.C.

DataUSA. Coos *County, NH.* [Online]https://datausa.io/profile/geo/coos-county-nh/

Eversource Energy. 2015. FERC Form 80 Submittal. March 16, 2015.

Eversource Energy. 2017. Annual Shoreland Water Quality Protection Act (SWQPA) Review and Inspection. FERC Project No. 2287-NH, J. Brodie Smith and No. 2288-NH, Gorham. Filed December 8, 2017.

Federal Energy Regulatory Commission (FERC). 1993. Final Environmental Impact Statement. Upper Androscoggin River Basin Hydroelectric Projects (FERC 2422-004, 2287-003, 2326-002, 2327-002, 2311-001, 2288-004, 2300-002). November 1993.

Federal Energy Regulatory Commission (FERC). 1994. Order Issuing New License. Public Service Company of New Hampshire Gorham Project. Project No. 2288-004. Issued August 1, 1994.

FERC (Federal Energy Regulatory Commission). 1995. Final Environmental Impact Statement for the Ayers Island Project (FERC Project No. 2457). Washington, D.C. 211 pp. plus appendices.

Federal Energy Regulatory Commission (FERC). 1995. Order Modifying and Approving Recreation Plan. Project No. 2288. 71 FERC ¶ 62,085. Issued May 1, 1995.

Federal Energy Regulatory Commission (FERC). 1999. Order Modifying and Approving Shoreland Protection Plan. Project No. 2288-015. 87 FERC ¶ 62,076. Issued· April 19, 1999.

Federal Energy Regulatory Commission (FERC). 2004. Handbook for Hydroelectric Project Licensing and 5 MW Exemptions from Licensing. [Online] URL: http://www.ferc.gov/industries/hydropower/gen-info/handbooks/licensing_handbook.pdf. Accessed April 9, 2018.

Federal Energy Regulatory Commission. 2012. List of Comprehensive Plans. January 2018. [Online] URL: http://www.ferc.gov/industries/hydropower/geninfo/ licensing/complan.pdf. Accessed August 3, 2018.

Federal Emergency Management Agency (FEMA). 2013. Flood Insurance Study. Coos County, New Hampshire. Volume 1 of 2. February 20, 2013.

Gawler, Susan and A. Cutko. 2010. Natural Landscapes of Maine: A Guide to Natural Communities and Ecosystems. Maine Natural Areas Program, Maine Department of Conservation.

Gosselin, Guy. 2018. Some Highlights of Gorham's History. Available at: https://web.archive.org/web/20120914093814/http://www.gorhamnh.org/Pages/GorhamNH_WebDocs/history.pdf. Accessed June 6, 2018.

Great Glen Trails (GGT). 2018. https://greatglentrails.com/. Accessed June 15, 2018.

Inglis, Jeff., Van Heeke, Tom., Weissman, Gideon., Hallock, Lindsey. 2014. "Waterways Restored: The Clean Water Act's Impact on 15 American Rivers, Lakes and Bays." *Environment America Research and Policy Center*.

MDIFW. 2018. Fisheries and stocking, http://www.maine.gov/ifw/fish-wildlife/fisheries/index.html

MDIFW. 2018. Fishing opportunities in Western Maine/Androscoggin River Valley Region. http://www.maine.gov/ifw/fishing-boating/fishing/fishing-opportunities/maine-fishing-guide/western-maine.html

Maine Rivers. 2018. Androscoggin Watershed. [Online] https://mainerivers.org/androscoggin.htm. Accessed August 3, 2018.

Multi-Resolution Land Characteristics Consortium (MRLC). 2018. National Land Cover Database 2011. https://www.mrlc.gov/nlcd2011.php. Accessed June 14, 2018.

Normandeau Associates Inc (NAI) 1989. Water Quality Modeling Study Androscoggin River Berlin, New Hampshire to Gilead, Maine. Prepared for James River Company Inc. Application for New License for Major Project Existing Dam Gorham Project FERC No. 2311. December 1991.

New Hampshire Department of Environmental Services (NHDES). 2008. New Hampshire Code of Administrative Rules. Chapter Env-Wq 1700 Surface Water Quality Standards. https://www.des.nh.gov/organization/commissioner/legal/rules/documents/env-wq1700.pdf. Accessed May 21, 2018.

New Hampshire Department of Environmental Services (NHDES). 2012. Environmental Fact Sheet. The Pemigewasset River. WD-R&L-9. Retrieved April 17, 2012 from http://des.nh.gov/organization/commissioner/pip/factsheets/rl/documents/rl-9.pdf.

New Hampshire Department of Environmental Services (NHDES). 2017a. 2016 Section 303(d) Surface Water Quality List. R-WD-17-09. https://www.des.nh.gov/organization/divisions/water/wmb/swqa/2016/index.htm. Accessed May 21, 2018.

New Hampshire Department of Environmental Services (NHDES). 2017b. Volunteer River Assessment Program. Report, Data, and Maps. https://www.des.nh.gov/organization/divisions/water/wmb/vrap/androscoggin/index.htm. Accessed May 29, 2018.

New Hampshire Department of Environmental Services (NHDES). 2017. Shoreland Program. https://www.des.nh.gov/organization/divisions/water/wetlands/cspa/index.htm. Accessed May 30, 2018.

New Hampshire Department of Environmental Services (NHDES). 2017. Aquatic Invasive Species Infestation in New Hampshire. Available online at: https://www.des.nh.gov/organization/divisions/water/wmb/exoticspecies/documents/milfoil_map_list.pdf [Accessed May 29, 2018].

New Hampshire Department of Natural and Cultural Resources (NH DNCR). 2013. 2013-2018 New Hampshire Statewide Outdoor Recreation Plan. http://www.nhstateparks.org/about-us/division/reports.aspx. Accessed June 15, 2018.

New Hampshire Department of Natural and Cultural Resources (NH DNCR). 2018a. New Hampshire State Parks Moose Brook State Park. https://www.nhstateparks.org/visit/state-parks/moose-brook-state-park.aspx. Accessed June 18, 2018.

New Hampshire Department of Natural and Cultural Resources (NH DNCR). 2018b. New Hampshire State Parks. Jericho Mountain State Park. https://www.nhstateparks.org/visit/state-parks/jericho-mountain-state-park.aspx. Accessed June 19, 2018.

New Hampshire Fish and Game Department (NHFGD). 2017. Endangered and Threatened Wildlife of New Hampshire. [Online] https://www.wildlife.state.nh.us/nongame/documents/endangered-threatened-wildlife-nh.pdf. Accessed June 15, 2018.

New Hampshire Fish and Game (NHFG). 2018. NH Boating and Fishing Public Access Map. https://wildlife.state.nh.us/maps/boatfish/index.html. Accessed June 15, 2018.

NHFGD. 2018. Fish Stocking. https://wildlife.state.nh.us/fishing/trout-stocking.html?news=621

New Hampshire Fish and Game (NHFG). 2018a. Endangered and Threatened Wildlife of NH. [Online] https://www.wildlife.state.nh.us/nongame/endangered-list.html. Accessed June 15, 2018.

New Hampshire Fish and Game (NHFG). 2018b. Bald eagle (*Haliaeetus leucocephalus*). [Online] https://www.wildlife.state.nh.us/wildlife/profiles/bald-eagle.html. Accessed June 15, 2018.

New Hampshire Department of Transportation (NHDOT). 2015a. Scenic and Cultural Byways White Mountain Trail National Scenic Byway. https://www.nh.gov/dot/programs/scbp/tours/whitemtn.htm. Accessed: June 21, 2018.

New Hampshire Department of Transportation (NHDOT). 2015b. Scenic and Cultural Byways Presidential Range Trail. https://www.nh.gov/dot/programs/scbp/tours/president.htm. Accessed: June 21, 2018.

New Hampshire Department of Transportation (NHDOT). 2015c. Scenic and Cultural Byways Woodland Heritage Trail. https://www.nh.gov/dot/programs/scbp/tours/woodland.htm. Accessed: June 21, 2018.

New Hampshire Department of Transportation (NHDOT). 2015d. Scenic and Cultural Byways The Moose Path Trail. https://www.nh.gov/dot/programs/scbp/tours/moosepath.htm. Accessed: June 21, 2018.

New Hampshire Natural Heritage Bureau (NHNHB). 2018. Rare Plants, Rare Animals, and Exemplary Natural Communities in New Hampshire Towns. [Online] https://www.nhdfl.org/DRED/media/Documents/Natural%20Heritage/TownLists.pdf. Accessed June 15, 2018.

New Hampshire Statutes (NHS). 1989. Chapter 485-A:8: Water Pollution and Waste Disposal, Standards for Classification of Surface Waters of the State http://gencourt.state.nh.us/rsa/html/L/485-A/485-A-8.htm. Accessed May 21, 2018.

New Hampshire Historical Society. 2018. Timeline of New Hampshire History. Available at: https://www.nhhistory.org/Timeline. Accessed on June 6, 2018.

NOAA (National Oceanic and Atmospheric Administration). 2004. Climatography of the United States No. 20. Monthly Station Climate Summaries, 1971-2000. New Hampshire, Lakeport 2 Station No. 274480.

National Park Service (NPS). 2018 "New England Province." [Online]https://www.nps.gov/articles/newenglandprovince.htm

National Park Service (NPS). 2018a. Nationwide Rivers Inventory- New Hampshire. https://www.nps.gov/subjects/rivers/new-hampshire.htm. Accessed June 15, 2018.

National Park Service (NPS). 2018b. National Scenic Trails. https://www.nps.gov/subjects/nationaltrailssystem/national-scenic-trails.htm. Accessed June 15, 2018.

National Park Service (NPS). 2018. National Scenic Trails. https://www.nps.gov/subjects/nationaltrailssystem/national-scenic-trails.htm. Accessed June 21, 2018.

National Wildlife Federation. 2015. Little Brown Bat. [Online] URL: https://www.nwf.org/Wildlife/Wildlife-Library/Mammals/Bats/Little-Brown-Bat.aspx [Accessed July 20, 2015].

Proctor, M.A. 2007. The Indians of the Winnipesaukee and Pemigewasset Valleys. Powwow River Books. Amesbury, MA.

Publicover, David, Weihrauch, Doug. 2003. Ecological Atlas of the Upper Androscoggin River Watershed. Appalachian Mountain Club, Jan., outdoors.org.

PSNH (Public Service Company of New Hampshire). 1984. Gorham Hydroelectric Company Application for License, No. 2457 FERC. Major Project - Existing Dam. 1000 Merrimack County, NH.

PSNH, P. S. 1984. *Gorham Hydroelectric Company Application for License, No. 2457 FERC Major Project - Existing Dam 1000.* Merrimack County, NH: Public Service Company of New Hampshire.

Public Service Company of New Hampshire (PSNH). November 1993. Final Environmental Impact Statement: Relicensing Seven Existing Projects in the Upper Androscoggin River Basin; FERC Project Nos. 2422-004, 2287-003, 2326-002, 2327-002, 2311-001, 2288-004, 2300-002.

Public Service of New Hampshire (PSNH). 1995. Final Shoreland Projection Plan Gorham Project. Project No. 2288. Filed July 31, 1995.

Public Service Company of New Hampshire (PSNH). 1996. Cultural Resource Management Plan for the Gorham Hydroelectric Facility, in Gorham Township, Coos County, New Hampshire. Santa Fe, NM 87505.

Public Service Company of New Hampshire (PSNH). 1998. 1994, 1995, & 1997 Final Report of Water Quality Monitoring for Gorham Project, FERC L.P. No. 2288.

Public Service of New Hampshire (PSNH). 1999. Addendum to Shoreland Protection Plan FERC Project No. 2288. July 1, 1999.

Public Service of New Hampshire (PSNH). 2000. Recreation Usage Report. Gorham Hydroelectric Project. Project No. 2288-NH. Submitted August 15, 2000.

Public Service of New Hampshire (PSNH). 2003. FERC Form 80 Submittal. March 27, 2003.

Public Service of New Hampshire (PSNH). 2005. Recreation Usage Report. Gorham Hydroelectric Project. Project No. 2288-NH. Submitted May 2, 2005.

Public Service of New Hampshire (PSNH). 2009. FERC Form 80 Submittal. March 2009.

Public Service of New Hampshire (PSNH). 2010. 2010 Recreational Usage Report for the Gorham Hydroelectric Project. Project No. 2288-NH. Submitted April 27, 2005.

Public Service of New Hampshire (PSNH). 2015. 2015 Recreational Usage Report for the Gorham Hydroelectric Project. Project No. 2288-NH. Submitted March 31, 2015.

Recreation in Gorham, NH. 2018. http://www.gorhamnewhampshire.com/Recreation.html. Accessed June 21, 2018.

Sperduto, Daniel D. and William F. Nichols. 2004. Natural Communities of New Hampshire. The New Hampshire Natural Heritage Bureau and Nature Conservancy. UNH Cooperative Extension, Durham, NH.

Town of Gorham, New Hampshire. 2018. Maps. http://www.gorhamnh.org/Pages/GorhamNH_Assessing/mapsfolder/maps. Accessed June 15, 2018.

United States Census Bureau. (2017a). *QuickFacts: Coos County, New Hampshire.* Retrieved from https://www.census.gov/quickfacts/fact/table/cooscountynewhampshire/PST045217

United States Census Bureau. (2017b). *QuickFacts: New Hampshire.* [Online]https://www.census.gov/quickfacts/NH

U.S. Climate Data. 2018. Climate Data, Berlin, Maine. [Online] https://www.usclimatedata.com/climate/berlin/new-hampshire/united-states/usnh0020. Accessed August 3, 2018.

United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS). (2018.) "Custom Soil Resource Report for Coos County Area, New Hampshire." [Online]https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm

U.S. Department of Transportation Federal Highway Administration (USDOT FHA 2018). America's Byways White Mountain Trail. https://www.fhwa.dot.gov/byways/byways/2256. Accessed June 21, 2018.

U.S. Fish and Wildlife Service (USFWS). 2016a. Species Profile: Northern Long-Eared Bat (*Myotis septentrionalis*). Available online at http://www.fws.gov/midwest/endangered/mammals/nlba/index.html. Accessed July 20, 2016

USGS. 2018. "Littleton Formation, undivided." Retrieved from https://mrdata.usgs.gov/geology/state/sgmc-unit.php?unit=NHDl%3B0

USGS. 2018a. Earthquake Hazards Program: Seismic Hazard Maps and Site-Specific Data. [Online] https://earthquake.usgs.gov/hazards/hazmaps/. Accessed June 20, 2018.

USGS. 2018b. United States – Lower 48. [Online]https://earthquake.usgs.gov/hazards/hazmaps/conterminous/index.php#2014. Accessed June 20, 2018.

USGS. 2018c. Earthquake Hazards 101 – the Basics. [Online] https://earthquake.usgs.gov/hazards/learn/basics.php. Accessed June 20, 2018.

Yoder, Chris., Kulik, Brandon., Audet, John., Bagley, Jeffrey. 2006. The spatial and relative abundance characteristics of the fish assemblages in three Maine Rivers.

Warner, John. "Re: Fw: Article 409 of the Ayers FERC License". Email to Curtis R. Mooney. March 24, 2010.

White Birches Camping Park (White Birches). 2018. http://www.whitebirchescamping.com/. Accessed June 15, 2018

APPENDIX A

AGENTS FOR CENTRAL RIVERS POWER

18 CFR 5.6(d)(2)(i) requires the exact name, business address and telephone number of each person authorized to act as agent for the applicant.

Exact name, business address and telephone:

Central Rivers Power NH, LLC
780 North Commercial Street
Manchester, New Hampshire, 03105-0330
(603) 744-8855 Ext. 5841

Authorized agents:

Mr. Brent Sowle
Hydro Manager
Central Rivers Power
15 Fletcher Street
Manchester, New Hampshire, 03102
(603) 634-2254

Mr. Curtis R. Mooney
Manager, Regulatory Affairs
Central Rivers Power
59 Ayers Island Road
Bristol, NH 03222
(603) 744-0846

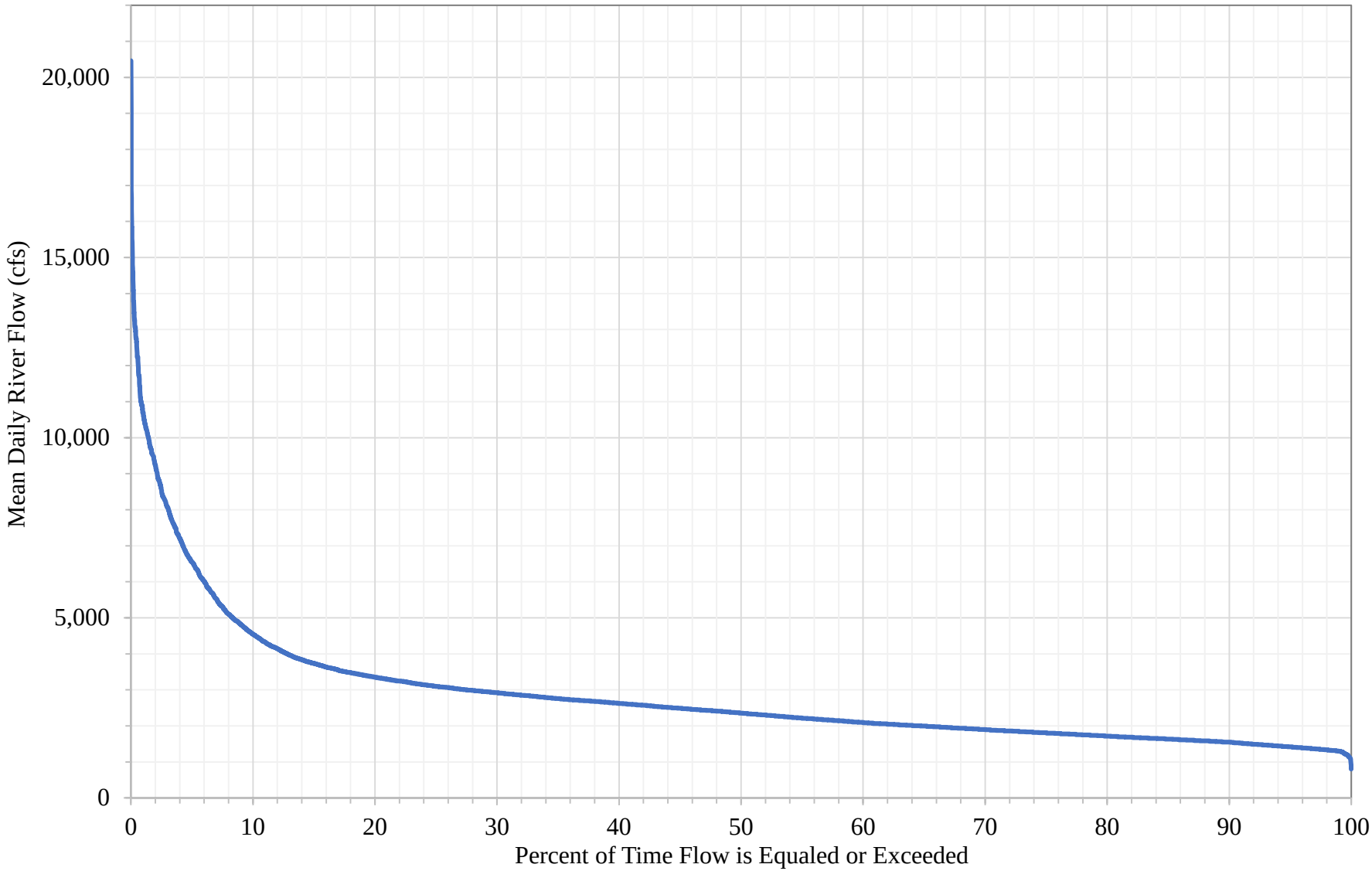
Mr. Randall Osteen
General Counsel, Portfolio Companies
Hull Street Energy, LLC
4920 Elm Street, Suite 205
Bethesda, MD 20814
(410) 303-4174

APPENDIX B

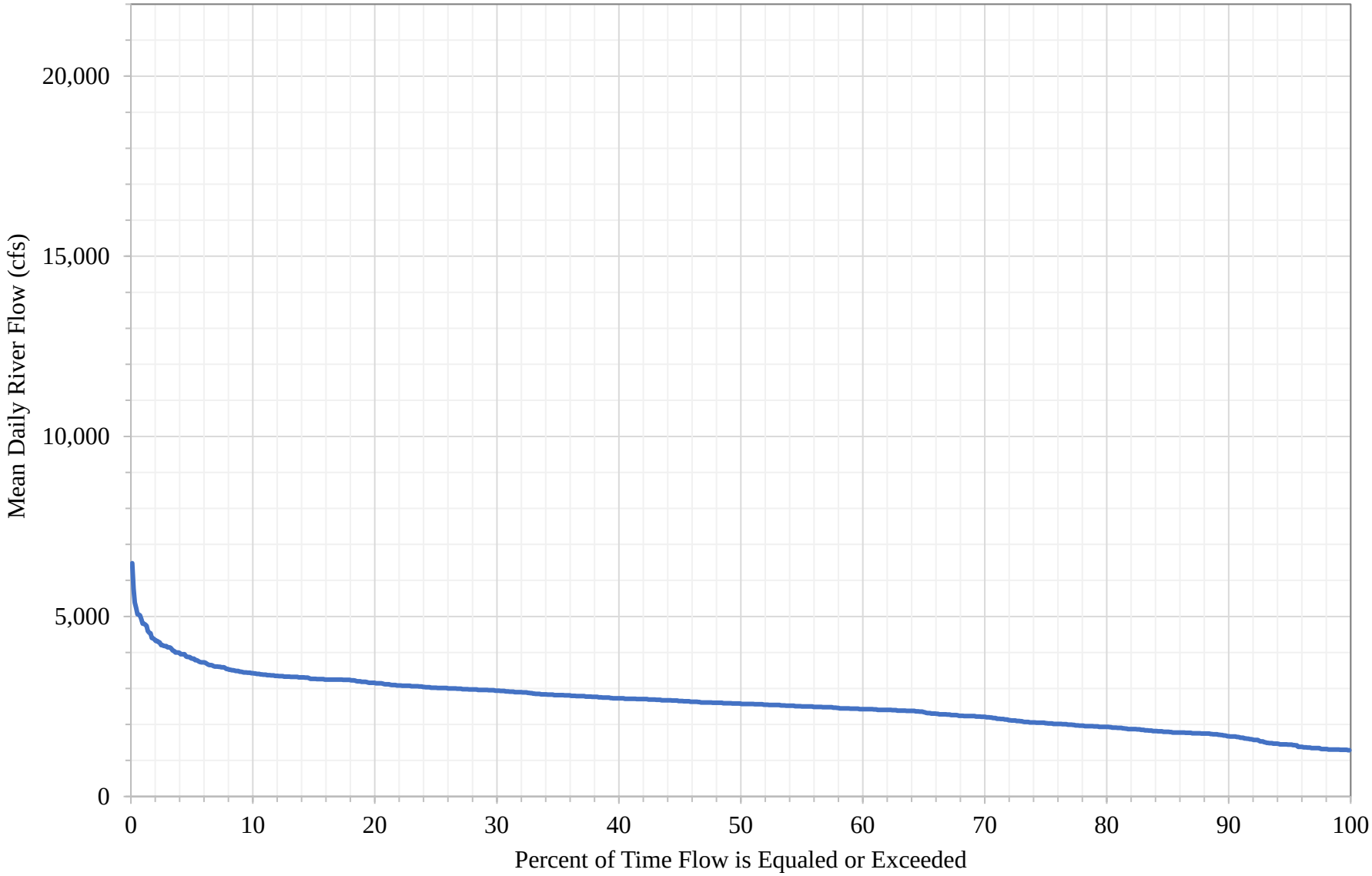
FLOW DURATION CURVES

Gorham Dam
Annual Flow Duration Curve

(Prorated from USGS Gage No. 01054000 Androscoggin River near Gorham, NH)
Period of Record 01/01/1988 to 12/31/2017



Gorham Dam
January Flow Duration Curve
(Prorated from USGS Gage No. 01054000 Androscoggin River near Gorham, NH)
Period of Record 01/01/1988 to 12/31/2017



Gorham Dam
February Flow Duration Curve
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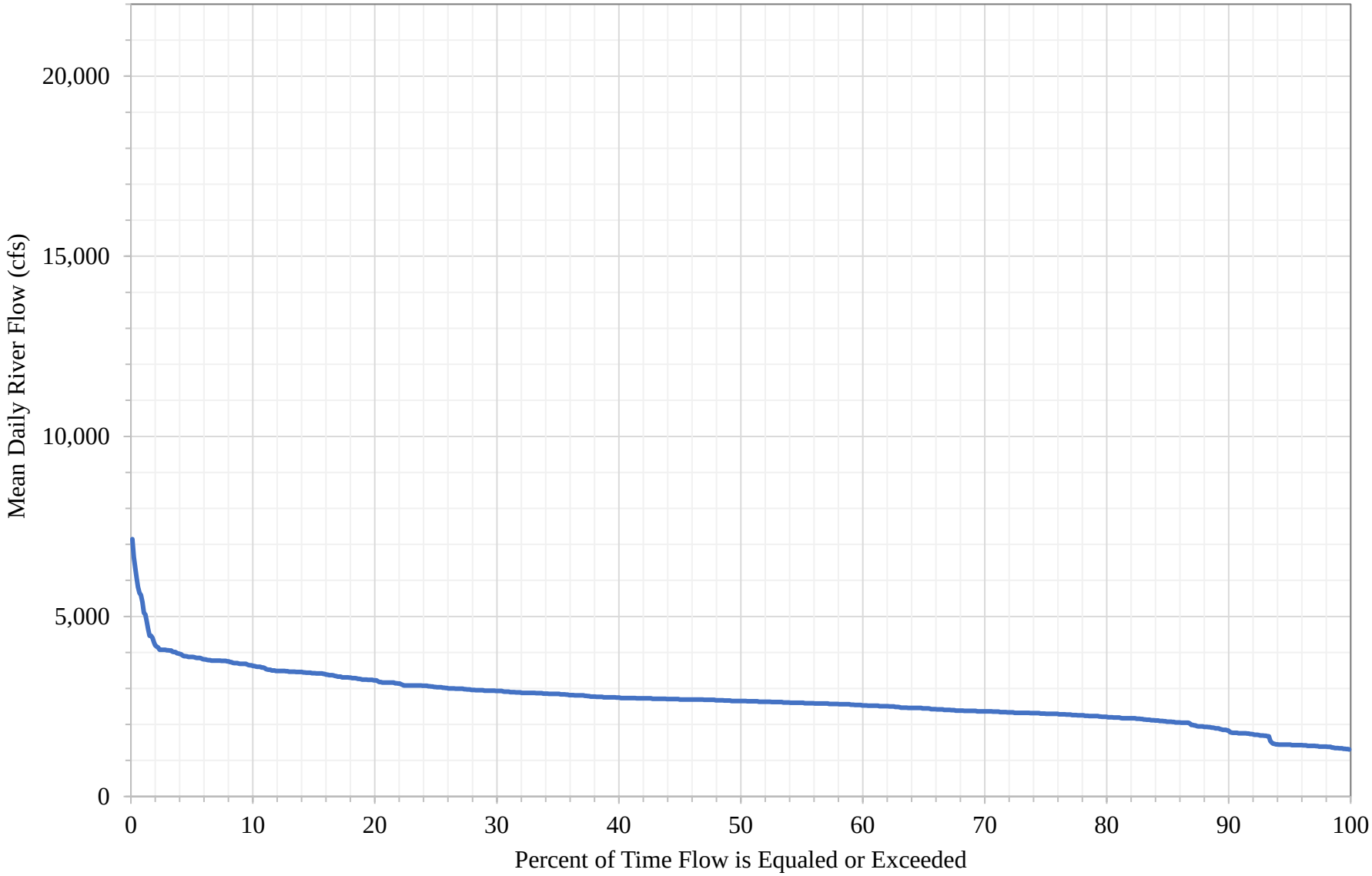

Gorham Dam
March Flow Duration Curve

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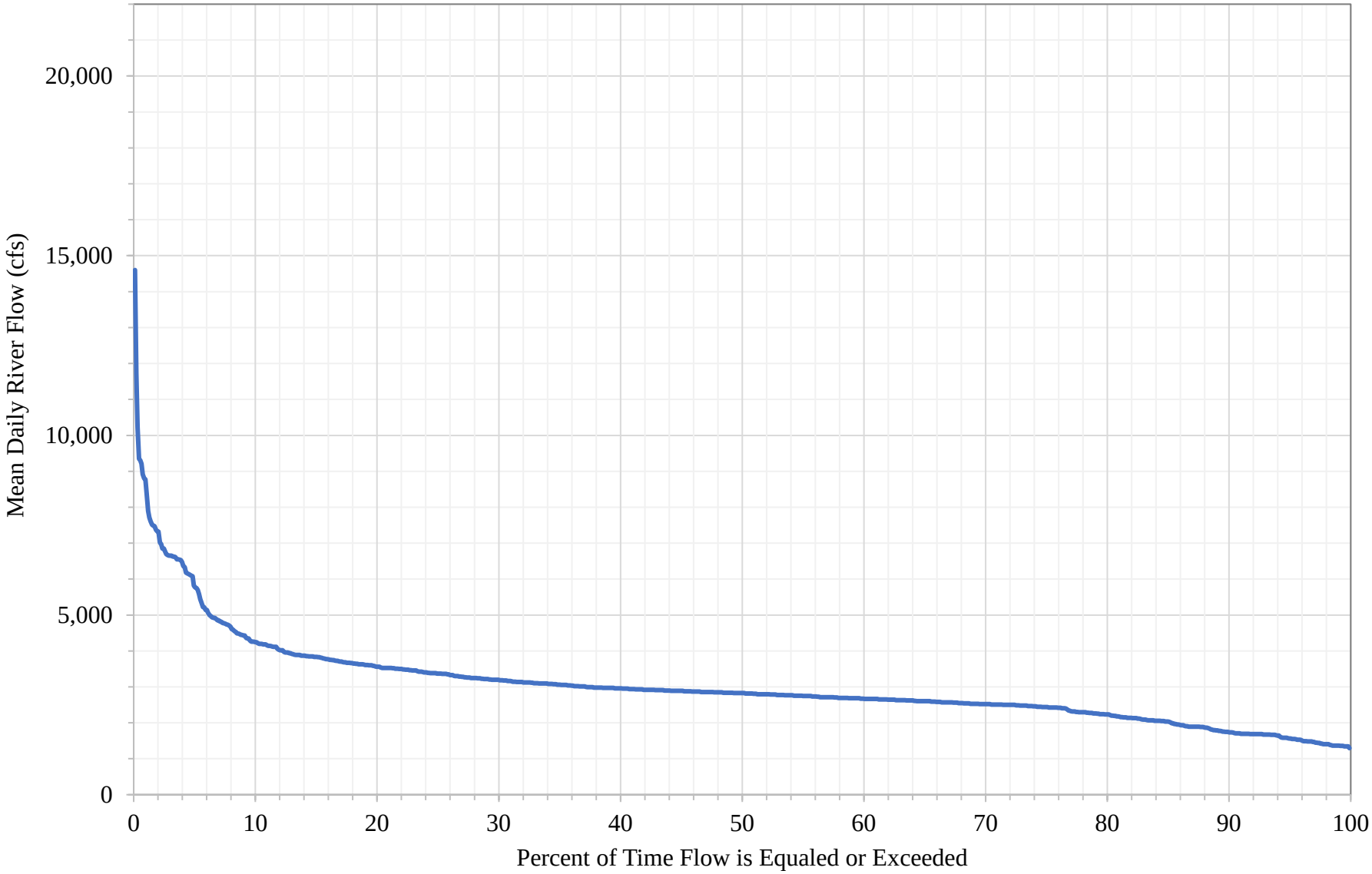

Gorham Dam
April Flow Duration Curve
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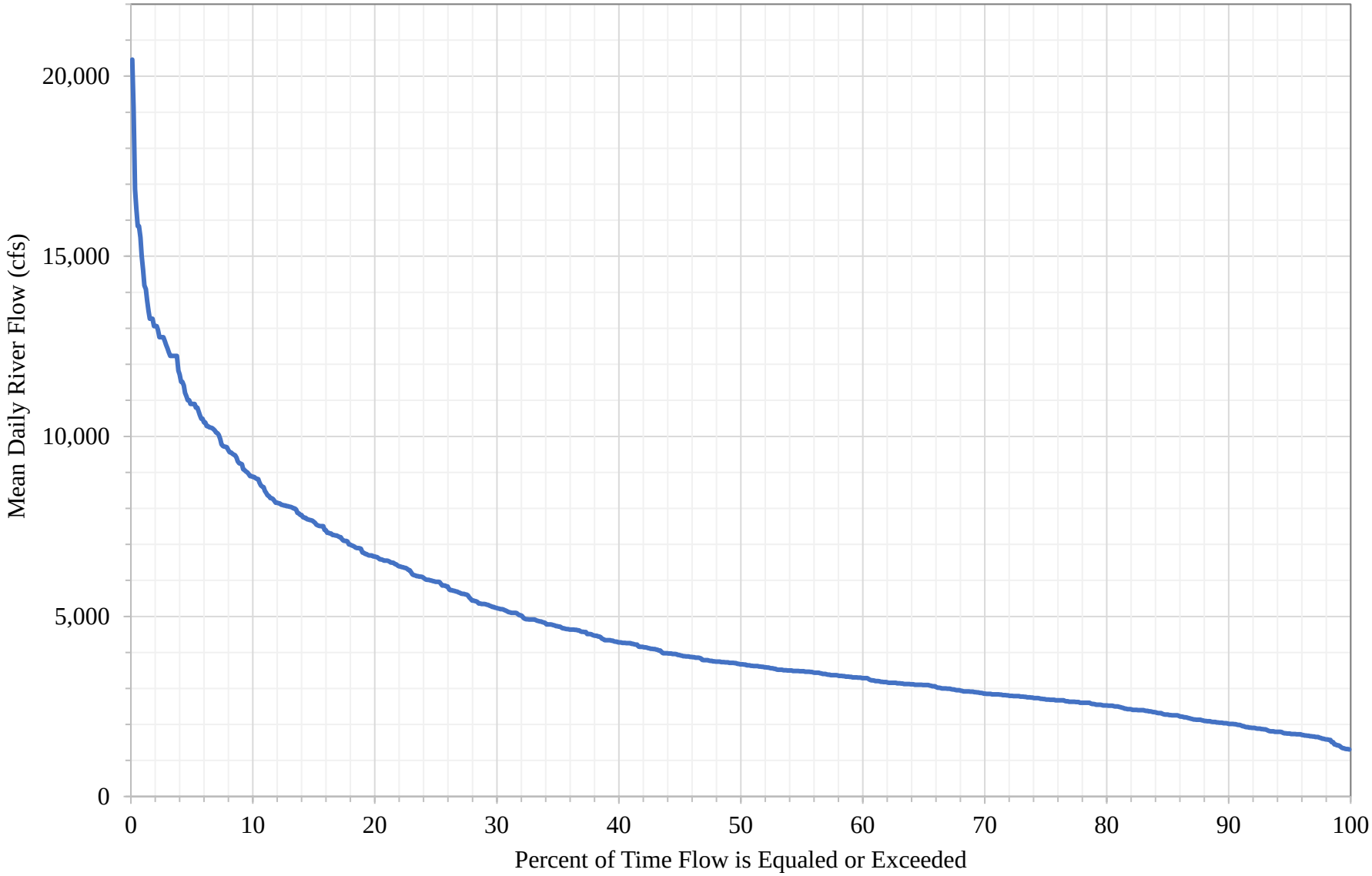
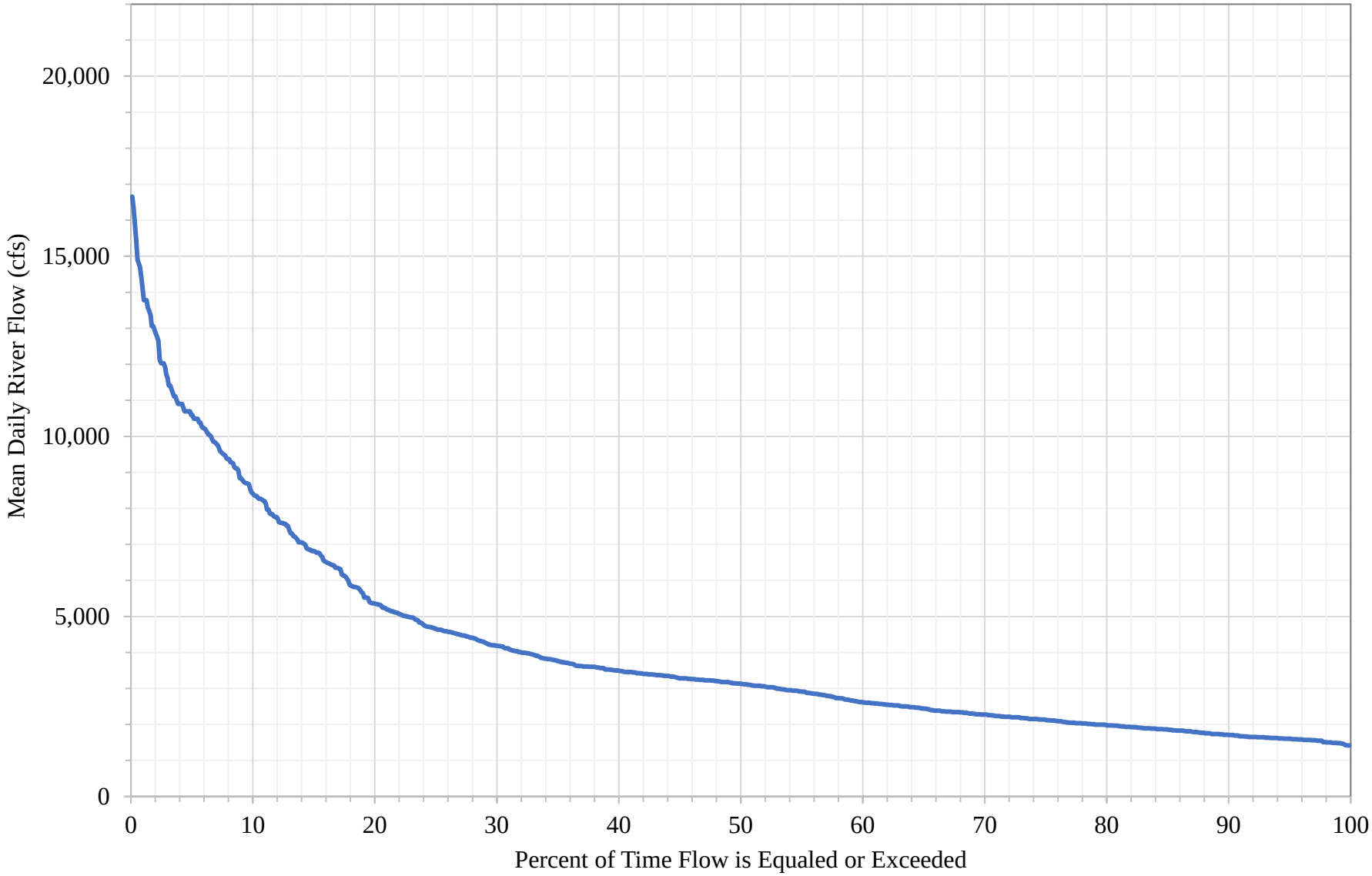
Period of Record 01/01/1988 to 12/31/2017



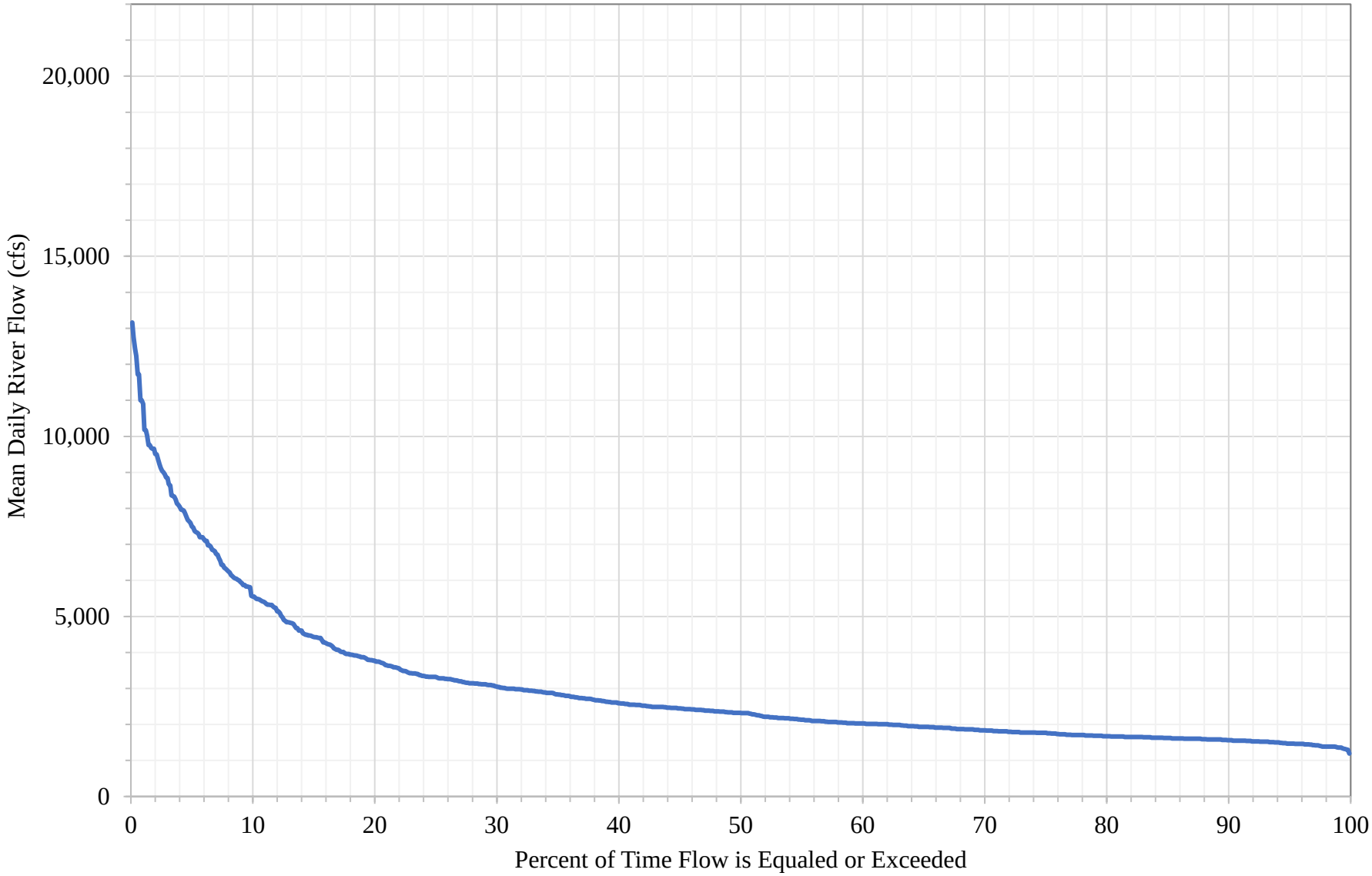
Gorham Dam
May Flow Duration Curve

(Prorated from USGS Gage No. 01054000 Androscoggin River near Gorham, NH)
Period of Record 01/01/1988 to 12/31/2017



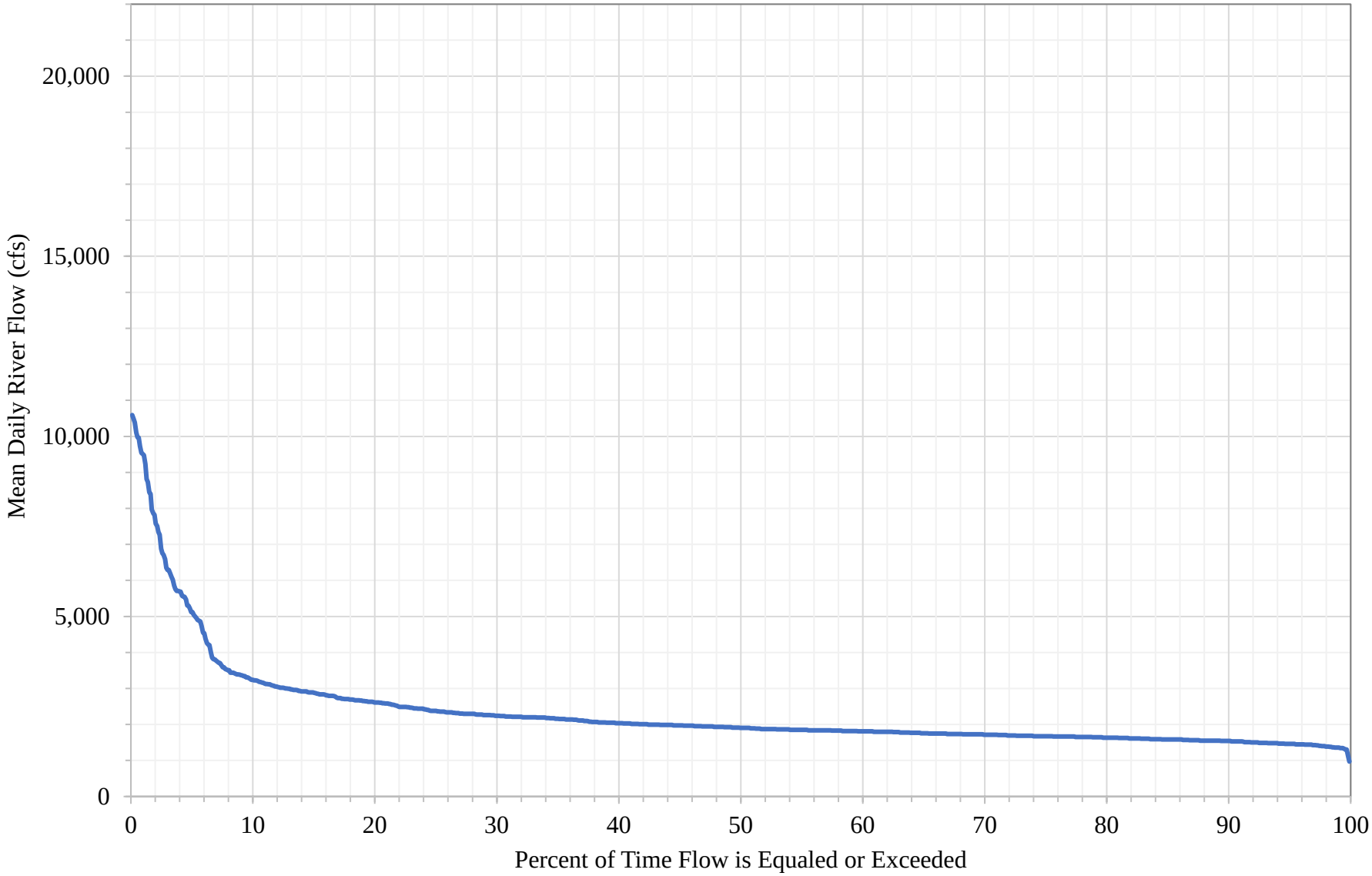
Gorham Dam
June Flow Duration Curve

(Prorated from USGS Gage No. 01054000 Androscoggin River near Gorham, NH)
Period of Record 01/01/1988 to 12/31/2017

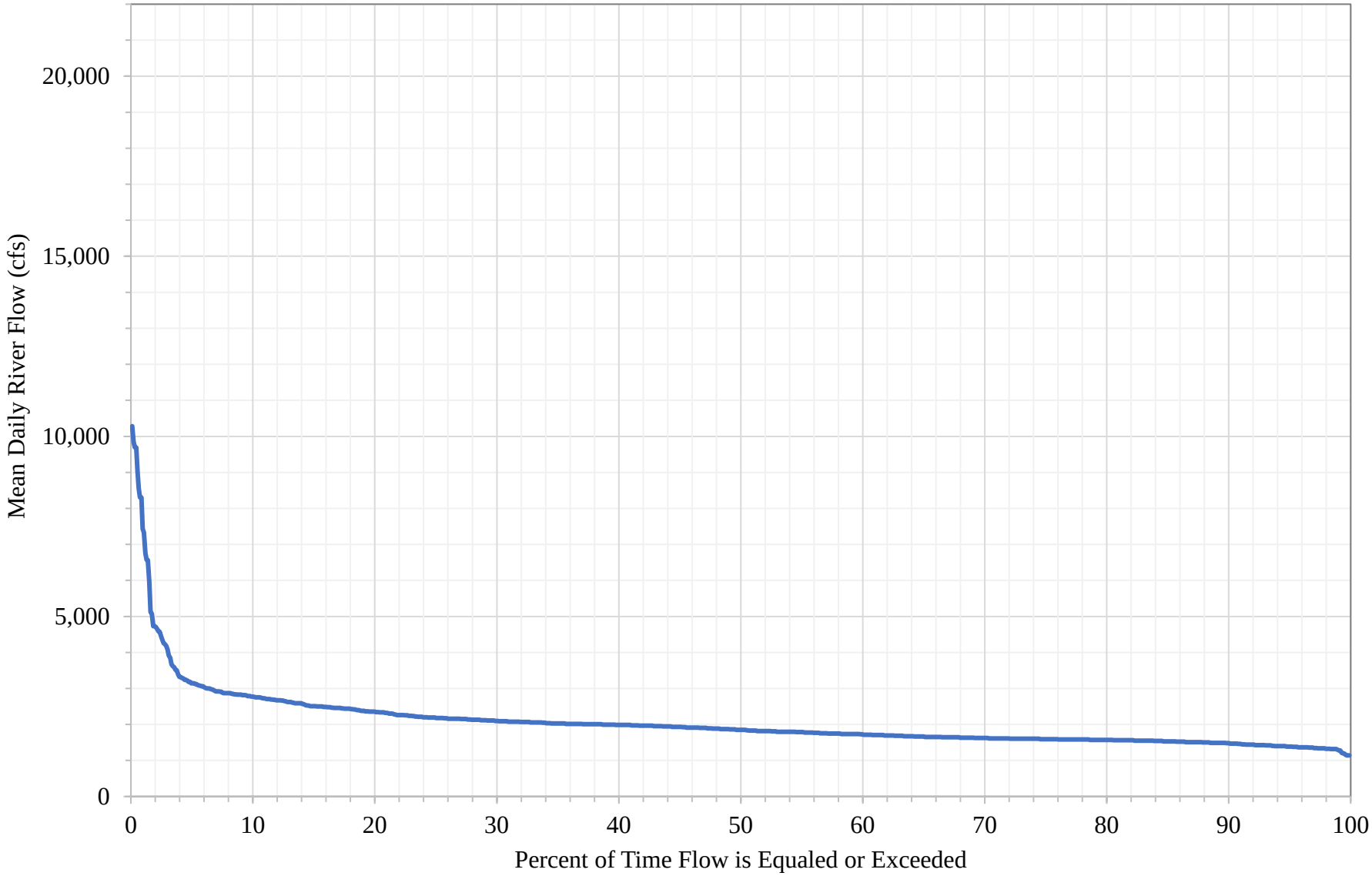


Gorham Dam
July Flow Duration Curve

(Prorated from USGS Gage No. 01054000 Androscoggin River near Gorham, NH)
Period of Record 01/01/1988 to 12/31/2017

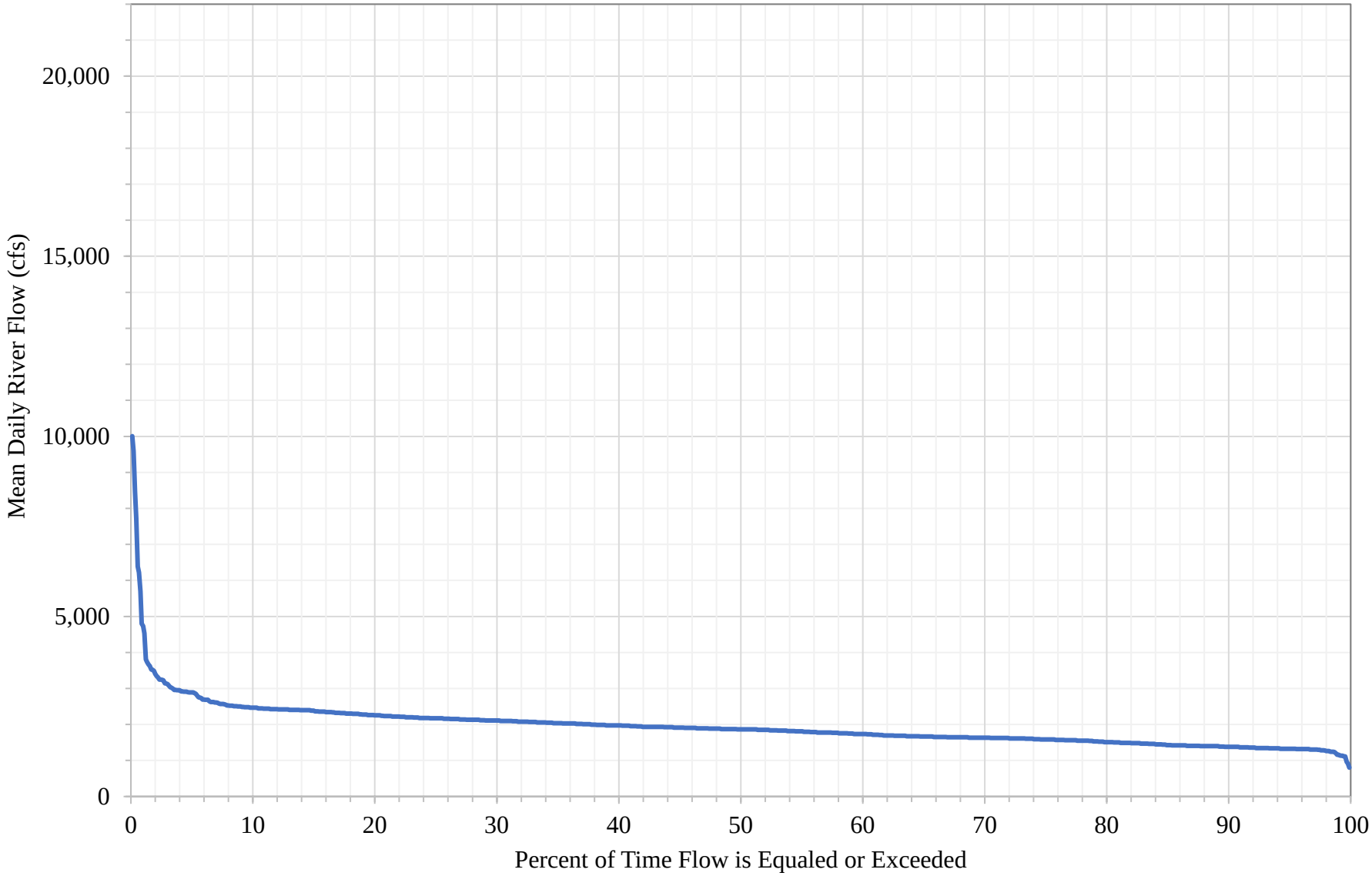


Gorham Dam
August Flow Duration Curve
(Prorated from USGS Gage No. 01054000 Androscoggin River near Gorham, NH)
Period of Record 01/01/1988 to 12/31/2017

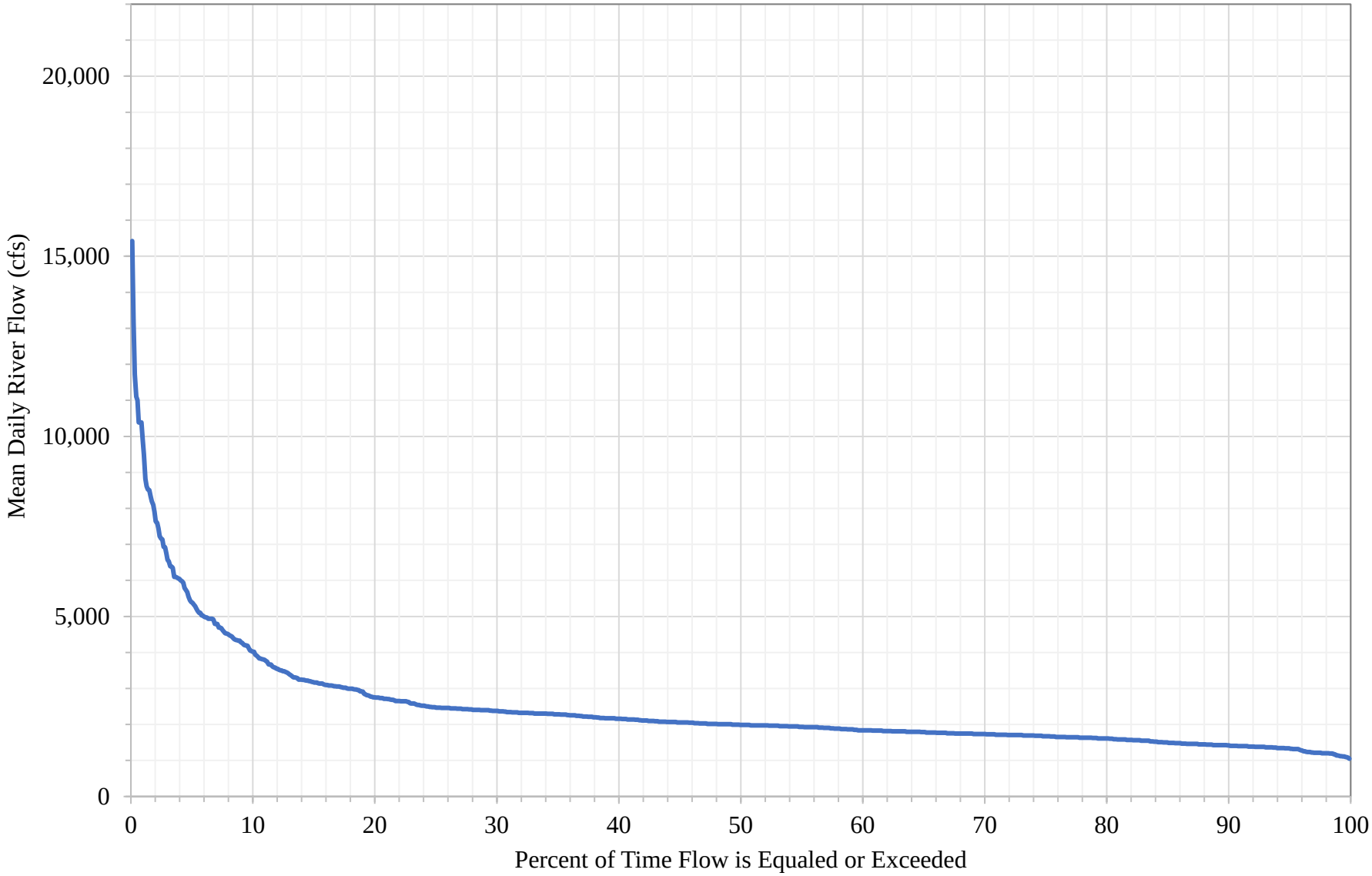


Gorham Dam
September Flow Duration Curve

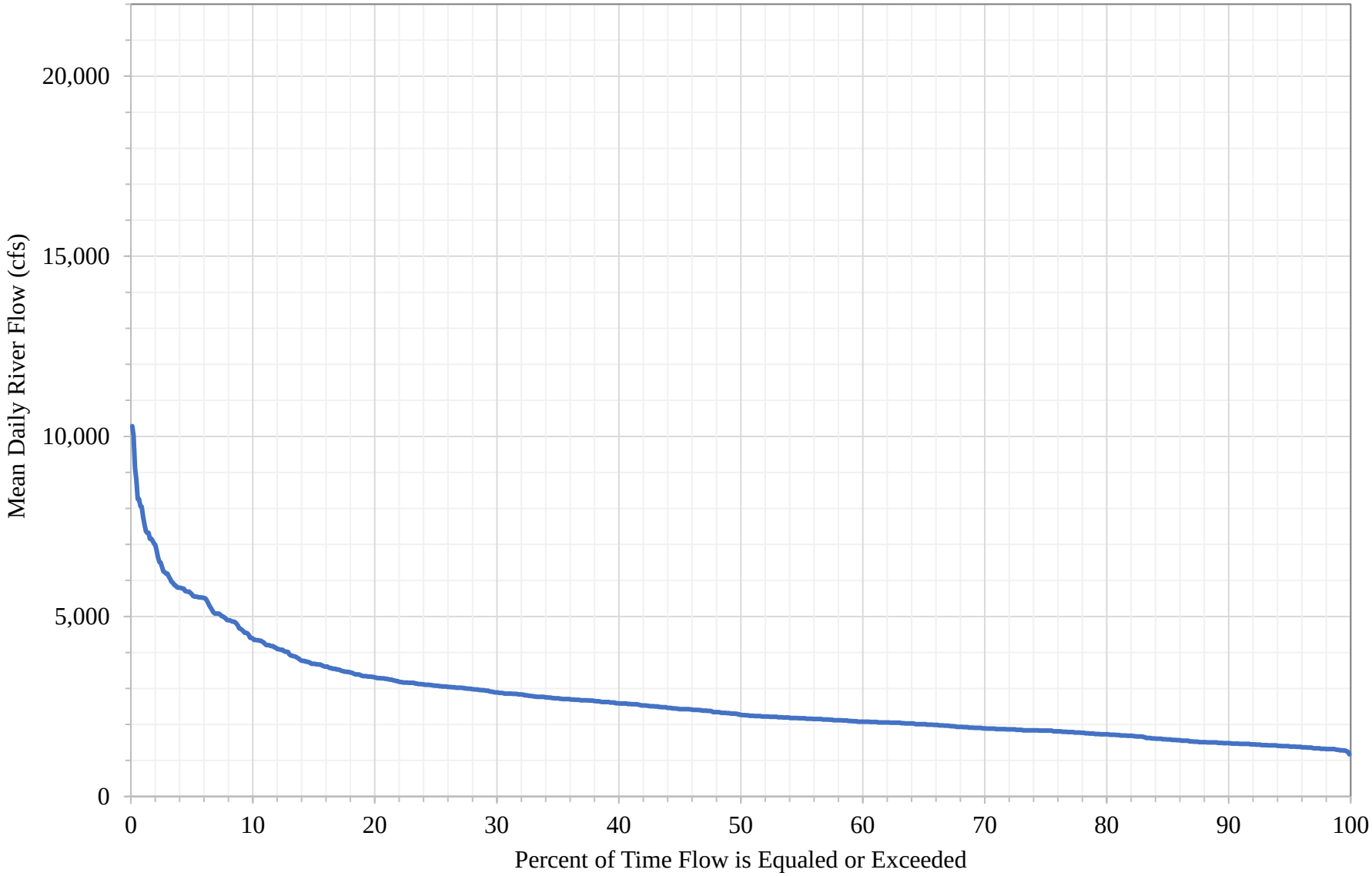
(Prorated from USGS Gage No. 01054000 Androscoggin River near Gorham, NH)
Period of Record 01/01/1988 to 12/31/2017



Gorham Dam
October Flow Duration Curve
(Prorated from USGS Gage No. 01054000 Androscoggin River near Gorham, NH)
Period of Record 01/01/1988 to 12/31/2017

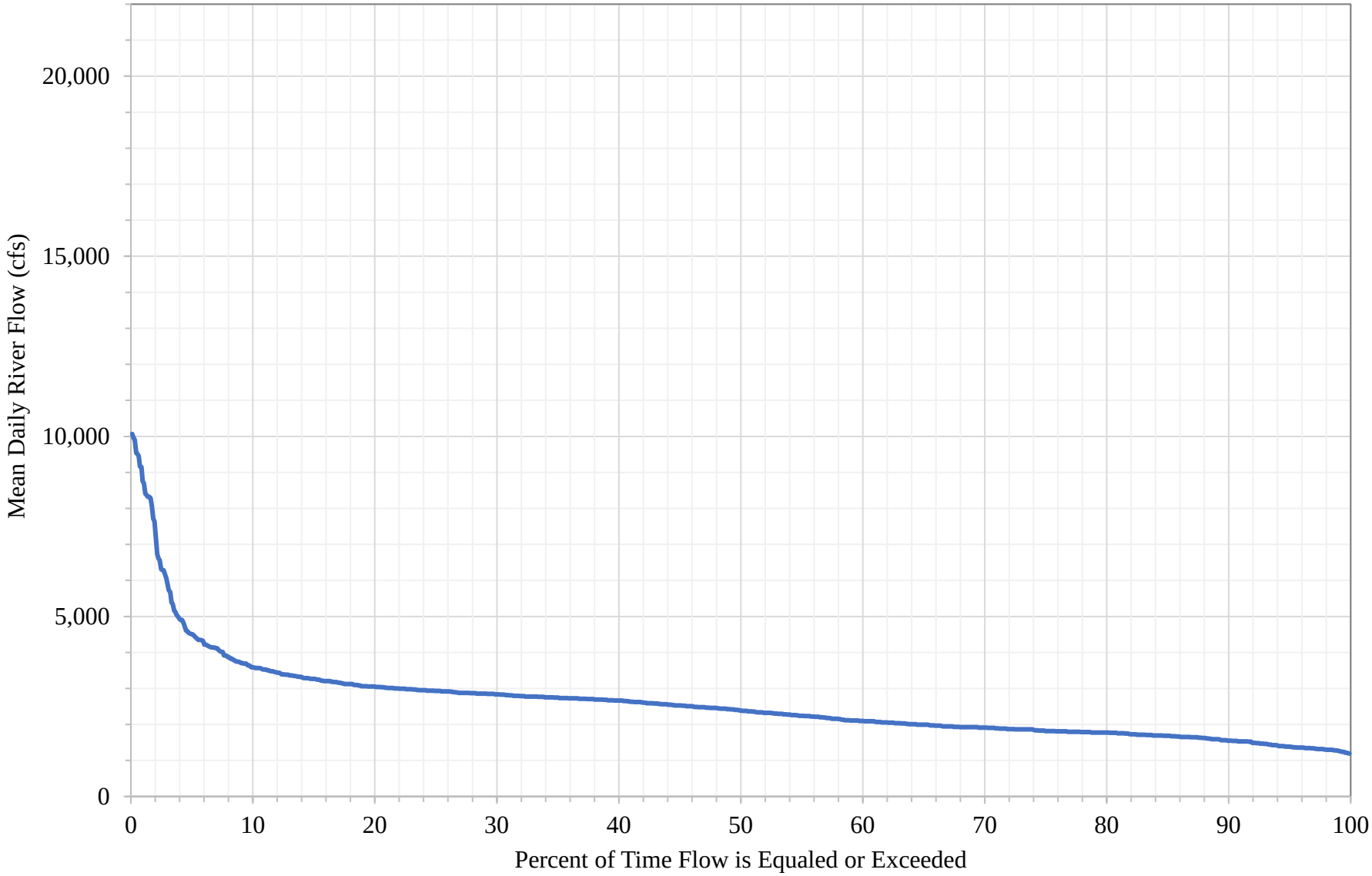


Gorham Dam
November Flow Duration Curve
(Prorated from USGS Gage No. 01054000 Androscoggin River near Gorham, NH)
Period of Record 01/01/1988 to 12/31/2017



Gorham Dam
December Flow Duration Curve

(Prorated from USGS Gage No. 01054000 Androscoggin River near Gorham, NH)
Period of Record 01/01/1988 to 12/31/2017



APPENDIX C

DISTRIBUTION LIST

J. B. Smith & Gorham Distribution List
July 2019

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Regional Engineer
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National Oceanic and Atmospheric Administration
National Marine Fisheries Service
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U.S. Senator
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Richard Kristoff
U.S. Army Corps of Engineers
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Major General Jeffrey L. Milhorn
Division Commander
U.S. Army Corps of Engineers
North Atlantic Division
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Director
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Commissioner
U.S. Bureau of Reclamation
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Washington, DC 20240

Secretary Wilbur L. Ross
Office of the Secretary
U.S. Department of Commerce
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Reston, VA 20192

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J. B. Smith & Gorham Distribution List
July 2019

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J. B. Smith & Gorham Distribution List
July 2019

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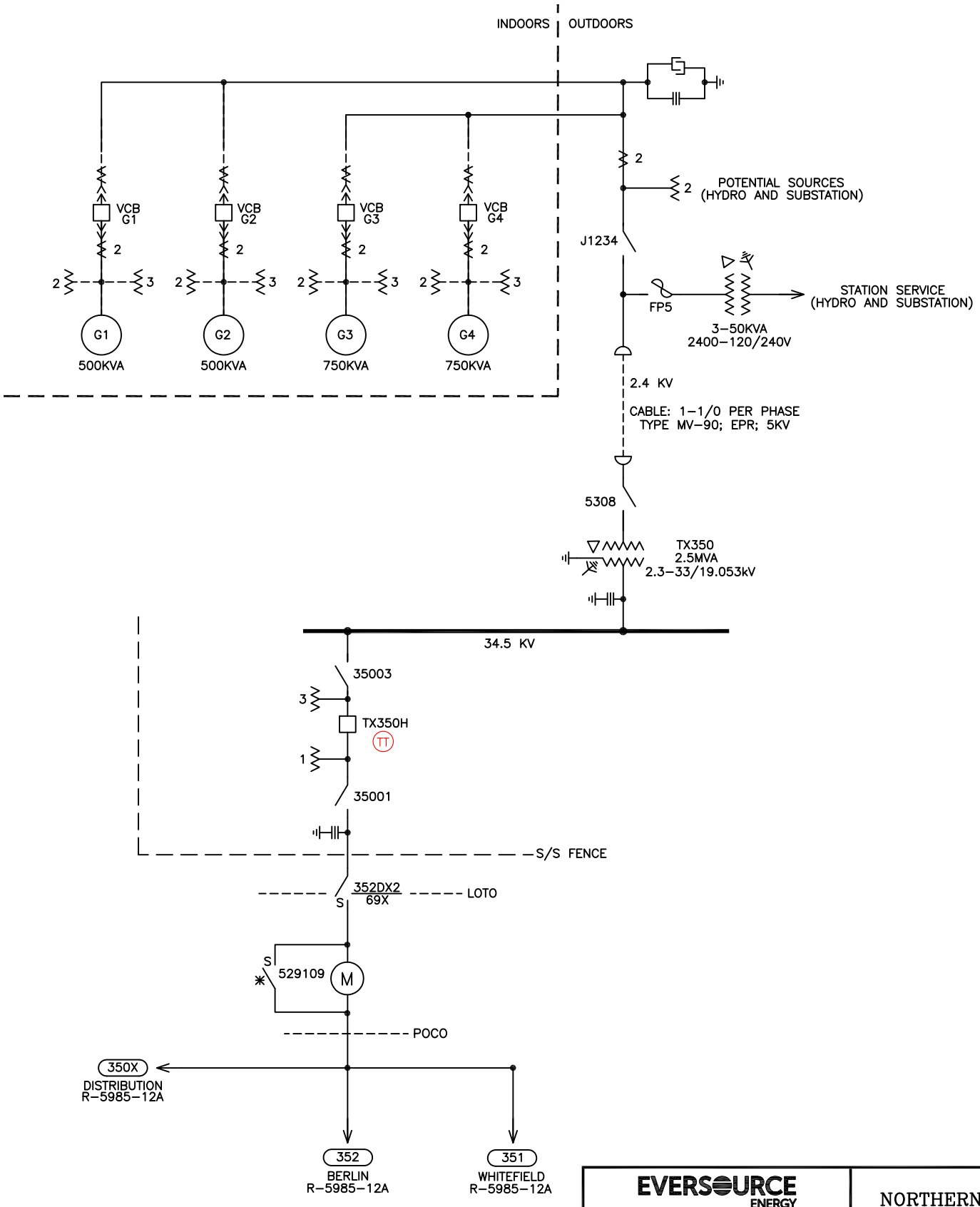
APPENDIX D

TRANSFER OF ELECTRICITY FROM PROJECT TO TRANSMISSION GRID (ONE LINE DIAGRAM)



TT TRANSFER TRIP, CONSULT STATION ORDERS

LOTO POD - LOCK OUT, TAG OUT-POINT OF DEMARCATION

POCO - POINT OF CHANGE OF OWNERSHIP

LAST REVISION DETAIL

CHANGE FP5 ORIENTATION, SWGR UPGRADES

EVERSOURCE ENERGY

NEW HAMPSHIRE

NORTHERN

GORHAM HYDRO

98 POWER HOUSE ROAD, GORHAM, NH

466-3331

DRN.	CHKD.	APPR.		
WNT	KPD	CEC	2/9/18	D-5947

/d/021002/038129076

APPENDIX E

CURRENT LICENSE REQUIREMENTS

68 FERC ¶ 61,170

UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Before Commissioners: Elizabeth Anne Moler, Chair;
Vicky A. Bailey, James J. Hoecker,
William L. Massey, and Donald F. Santa, Jr.

Public Service Company of New Hampshire	)	Project No. 2288-004

ORDER ISSUING NEW LICENSE

(Issued August 1, 1994)

Public Service Company of New Hampshire (Public Service) filed a license application under Part I of the Federal Power Act (FPA) for the continued operation and maintenance of the 2,150 kilowatt (kW) Gorham Project, located on the Androscoggin River, in Coos County, New Hampshire. The Androscoggin River is a navigable waterway of the United States. 1/ Public Service proposes no new capacity and no new construction. We will issue the license.

BACKGROUND

Notice of the application has been published in the Federal Register. Motions to intervene in this proceeding were filed by the City of Berlin, New Hampshire (Berlin), the Town of Gorham, New Hampshire (Gorham), the United States Department of the Interior (Interior), the United States Environmental Protection Agency (EPA), the New Hampshire Department of Fish and Game (Fish and Game), and a coalition of groups consisting of Conservation Law Foundation, Inc., Appalachian Mountain Club, American Rivers, Inc., and Trout Unlimited (Conservation Law). American Whitewater Affiliation and New England FLOW (American Whitewater) filed a late motion to intervene, which was granted by notice issued June 10, 1993.

On October 19, 1992, the Commission issued a Notice of Intent to prepare an Environmental Impact Statement (EIS) for this project. The Commission's staff issued an FEIS for this project on November 30, 1993. The comments received from interested agencies and individuals have been fully considered in the FEIS in determining whether to issue the license. The staff also prepared a Safety and Design Assessment (SDA), which is available in the Commission's public file for this project.

Concurrently with this order, we are issuing an Order Granting Applications for New Licenses, which discusses issues

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1/ Public Service Company of New Hampshire, 27 FPC 826 (1962).

common to seven projects on the Androscoggin River. The discussion in that order is incorporated by reference herein.

PROJECT DESCRIPTION

The existing project consists of a 20-foot-high timber crib dam, a reservoir with a surface area of 32 acres, a spillway, a power canal, a powerhouse containing 4 generating units with a total installed capacity of 2,150 kW, a 200-foot-long transmission line, and appurtenant facilities. The project has an annual generation of 13.63 GWh. A more detailed project description can be found in ordering paragraph B(2) and in the FEIS.

APPLICANT'S PLANS AND CAPABILITIES

In accordance with Sections 10 and 15 of the FPA, we have evaluated Public Service's record as a licensee for these areas: (1) conservation efforts; (2) compliance history and ability to comply with the new license; (3) safe management, operation, and maintenance of the project; (4) ability to provide efficient and reliable electric service; (5) need for power; (6) transmission line improvements; and (7) project modifications.

1. Section 10(a)(2) (c): Conservation Efforts

The New Hampshire Public Utilities Commission (NHPUC) has statutory and regulatory authority regarding least cost planning and energy conservation in the State of New Hampshire. Public Service promotes electric conservation among its member systems in compliance with the requirements and policies of the NHPUC. Public Service's plans and activities to promote and achieve conservation of electric energy and to reduce the peak demand for generating capacity include: (1) energy analyses, (2) interruptable rates, (3) time of use rates for large power customers and rates for thermal storage space and water heating, (4) implementation of demand-side management programs, (5) energy-efficient technologies, (5) weatherization, and (6) bill-stuffing of conservation information to its customers. Therefore, Public Service is making a good faith effort to conserve electricity in compliance with the requirements of the NHPUC.

2. Section 15(a)(2)(A): Compliance History and Ability to Comply with the New License

We have reviewed Public Service's license application in an effort to judge its ability to comply with the articles, terms and conditions of any license issued, and with other applicable provisions of this part of the FPA. Based on that review, we believe Public Service has or can acquire the resources and

expertise necessary to carry out its plans and comply with all articles, terms and conditions of a new license.

3. Section 15 (a)(2)(B): Safe Management, operation, and Maintenance of the Project

Public Service has continuously operated the plant safely. Upon the onset of flood conditions at the Gorham Project, operating personnel would attempt to remove the flashboard supports in advance of flood stages. When circumstances prevent the removal of the flashboard supports prior to flooding, the panel support would fail by design when headwater levels rise above two feet above the top of flashboards. This station has no downstream warning device due to the absence of a wastegate and the unit's very limited capacity to cause significant flow variations downstream. The Gorham Project is currently classified as having a low hazard potential, and we conclude the project will be safe for continued use and operation.

4. Section 15(a)(2) (C): Ability to Provide Efficient and Reliable Electric Service

The project is operated to derive maximum energy benefit from the river flow and is, therefore, operating in an efficient and reliable manner.

5. Section 15(a)(2)(D): Need for Power

Public Service's need for the electricity produced by the project is addressed in the FEIS. Based on that discussion, we conclude that Public Service's short- and long-term need for power exists to justify licensing the Gorham Project.

6. Section 15(a)(2)(E): Transmission Line Improvements

Public Service proposes no new development at the project but wants to continue to use the low-cost energy in its system. The transmission and distribution systems are designed to function with the project out-of-service, such that no operational or circuit loading impacts would occur.

Therefore, the existing transmission system is sufficient, and no changes to the service affected by the project operation would be necessary whether the Commission issues a license for the project or not.

7. Section 15 (a)(2) (F): Project Modifications

Public Service proposes to modify the existing operation of the Gorham Project to enhance environmental and aesthetic resources affected by the project. Public Service doesn't

propose any additional generating capacity for the project. The project, as presently constructed and as Public Service proposes to operate it, fully develops and uses the economical hydropower potential of the site.

8. Section 15(a)(3)(A) and(B): Compliance Records

Public Service has complied with the terms and conditions of the existing license and has made timely filings with the Commission.

WATER QUALITY CERTIFICATION

The New Hampshire Department of Environmental Services granted Public Service a water quality certification for the Gorham Project on April 25, 1991. It prescribed a substantial and comprehensive water quality monitoring plan, which is included in the license as Article 405.

SECTION 18 - RESERVATION OF AUTHORITY TO PRESCRIBE FISHWAYS

The Department of the Interior requests that any license issued for the Gorham Project include a reservation of authority for Interior to prescribe the construction, operation, and maintenance of fishways pursuant to Section 18 of the FPA. Article 404 of the license reserves authority to the Commission to require the licensee to construct, operate and maintain such fishways as may be prescribed by Interior pursuant to Section 18 of the FPA.

RECOMMENDATIONS OF FEDERAL AND STATE FISH AND WILDLIFE AGENCIES

Section 10(j) of the FPA requires the Commission to include license conditions, based on recommendations of federal and state fish and wildlife agencies, for the protection of, mitigation of adverse impacts to, and enhancement of fish and wildlife resources. Pursuant to Section 10(j) of the FPA, the Commission's staff made a determination that the recommendations of the federal and state fish and wildlife agencies are consistent with the purposes and requirements of Part I of the FPA and applicable law. The staff has addressed the concerns of the Federal and state fish and wildlife agencies in the PEIS and the license includes conditions consistent with the recommendations of the agencies.

COMPREHENSIVE PLANS

Section 10(a)(2) of the FPA requires the Commission to also consider the extent to which a project is consistent with federal or state comprehensive plans for improving, developing, or conserving a waterway or waterways affected by the project. Under Section 10(a)(2) of the FPA, federal and state agencies

filed 12 comprehensive plans that address various resources in New Hampshire. Of these, staff identified and reviewed eight plans relevant to this project. 2/ No conflicts were found.

COMPREHENSIVE DEVELOPMENT

Sections 4(e) and 10(a)(1) of the FPA require the Commission to give equal consideration to all uses of the waterway on which a project is located. When the Commission reviews a project, the recreational, fish and wildlife resources, and other nondevelopmental values of the involved waterway are considered equally with power and other developmental values. In determining whether, and under what conditions, a hydropower license should be issued, the Commission must weigh the various economic and environmental tradeoffs involved in the decision.

Based on an independent review and evaluation of the existing Gorham Project, agency recommendations, and the no-action alternative as documented in the FEIS, we have selected issuing a new license for the Gorham Project with additional enhancement measures as the preferred option. We have selected this option because: (1) the required measures would protect and enhance the water quality, fishery resources and aesthetics; and (2) the electricity generated from a renewable resource would be beneficial because it would continue to replace the use of fossil-fueled, steam-electric generating plants, thereby conserving nonrenewable energy resources and reducing atmospheric pollution.

The existing Public Service Gorham Project has an installed capacity of 2.15 MW and generates about 13.80 GWh of energy per year. The annual operating cost of the existing project is about $91,000 (6.61 mills/kWh). The 30-year levelized annual value of the project's power, based on the cost of equivalent alternative replacement power in the region, is about $1,048,000

2/ Wild and scenic rivers for New Hampshire, New Hampshire Office of State Planning, 1977; New Hampshire outdoors, 1988-1993: State comprehensive outdoor recreation plan, New Hampshire Office of State Planning, 1989; New Hampshire wetlands priority conservation plan, New Hampshire Office of State Planning, 1989; Public access plan for New Hampshire's lakes, ponds, sand rivers, New Hampshire Office of State Planning, 1991; New Hampshire rivers management and protection plan, State of New Hampshire, 1991; North American Waterfowl Management Plan, U.S. Fish and Wildlife Service, 1986; The nation-wide rivers inventory, National Park Service, 1982; Fisheries USA: The recreational fisheries Policy of the U.S. Fish and Wildlife Service, U.S. Fish and Wildlife Service, undated.

(75.91 mills/kWh), in 1994 dollars. Therefore, the levelized net annual economic benefit of the existing project without any enhancement measures would be about $956,000 (69.30 mills/kWh).

The enhancement measures being required include a minimum flow of 200 cfs into the bypassed reach of the dam, downstream fish bypass facilities, protection of wildlife and improvement of the aesthetics of the project. The 200-cfs minimum flow would reduce the project's existing energy generation by about 0.76 GWh annually, and the project's 30-year levelized net economic benefits by about $46,000 per year. The downstream fish passage would further reduce the project's energy generation by about 0.36 GWh annually, and the project's 30-year levelized net economic benefits by about $167,000 per year. Even with the enhancement measures, the project would provide about 12.68 GWh of clean and renewable energy annually, at a cost significantly below the cost of equivalent replacement power. We conclude that the existing project would continue to be economically beneficial when compared to the alternative cost of fossil fuel and capacity in the region.

SUMMARY OF FINDINGS

Background information, analysis of impacts and support for related license articles are contained in the FEIS.

The design of this project is consistent with the engineering standards governing dam safety. The project will be safe if operated and maintained in accordance with the requirements of this license. Analysis of related issues is provided in the SDA.

We conclude that the project would not conflict with any planned or authorized development, and would be best adapted to comprehensive development of the waterway for beneficial public uses.

The Commission orders:

(A) This license is issued to Public Service Company of New Hampshire (Licensee), for a period of 30 years, effective the first day of the month in which this license is issued, to operate and maintain the Gorham Project. This license is subject to the terms and conditions of the FPA, which is incorporated by reference as part of this license, and subject to the regulations the Commission issues under the provisions of the FPA.

(B) The project consists of:

(1) All lands, to the extent of the Licensee's interests in those lands shown by Exhibit G:

Exhibit G-	FERC No. 2288-	Showing
1	28	Project Area Map
2	29	Project Area Map
3	30	Project Area Map

(2) Project works consisting of: (a) a timber crib, L-shaped dam, 417 feet long and about 20 feet high, with three sections: (1) a 90-foot-long spillway section, with a steel sheet pile facing, having a crest elevation of 772.23 feet (USGS), topped with wooden flashboards, about 1.7 feet high, (2) a 252-foot-long spillway section, with two layers of 3-inch wooden plank facing, having a crest elevation of 768.12 feet (USGS), topped with wooden flashboards, about 5.4 feet high, and (3) a 75-foot-long reinforced-concrete sluiceway section, with a crest elevation of 768.20 feet (USGS), topped with 5.33-foot-high wooden flashboards, having one 15-foot-wide sluice gate; (b) an earthen power canal, 415 feet long by 60 feet wide by 20 feet deep; (c) a reservoir with a surface area of 32 acres, at water surface elevation of 773.53 feet (USGS); (d) a powerhouse equipped with two 400-kW Allis Chalmers generators driven by two 583-horsepower (hp) S. Morgan Smith vertical, Francis-type turbines, and two 675-kW Allis-Chalmers generators driven by two 1,000-hp Allis Chalmers vertical, propeller-type turbines, totaling a maximum hydraulic capacity of 2,000 cfs, at an operating head of about 18 feet; (e) an existing 33-kV, 200-foot-long primary transmission line; and (f) appurtenant facilities.

The project works generally described above are more specifically shown and described by those portions of Exhibits A and F shown below:

Exhibit A - The following sections of Exhibit A filed December 26, 1991, and revisions in the additional information response filed on August 18, 1992:

The dam, turbines, generators, transmission line, and appurtenant facilities as described on pages A-1 through A-8.

Exhibit F - The following Exhibit F drawings filed on December 26, 1991, as revisions in the additional information response filed on August 18, 1992:

Exhibit	FERC No.	Showing
F-1	2288-20	Dam Plan and Elevation
F-2	2288-21	Timber Section Plan
F-3	2288-22	Timber Section Sections
F-4	2288-23	Powerhouse Floor Plan
F-5	2288-24	Unit Nos. 1 & 2 Sections
F-6	2288-25	Powerhouse Floor Plan
F-7	2288-26	Unit Nos. 3 & 4 Sections
F-8	2288-27	Unit Nos. 3 & 4
F-9	2288-28	Canal Gatehouse Section View

(3) All of the structures, fixtures, equipment or facilities used to operate or maintain the project and located within the project boundary, all portable property that may be employed in connection with the project and located within or outside the project boundary, and all riparian or other rights that are necessary or appropriate in the operation or maintenance of the project.

(C) The Exhibits A, F, and G described above are approved and made part of the license.

(D) This license is subject to the articles set forth in Form L-3, (October 1975), entitled "Terms and Conditions of License for Constructed Major Project Affecting Navigable Waters of the U.S.," and the following additional articles.

Article 201. The Licensee shall pay the United States an annual charge, effective the first day of the month in which this license is issued, for the purpose of reimbursing the United States for the cost of administration of Part I of the FPA as determined by the Commission. The authorized installed capacity for that purpose is 2,870 horsepower.

Article 202. Pursuant to Section 10(d) of the FPA, a specified reasonable rate of return upon the net investment in the project shall be used for determining surplus earnings of the project for the establishment and maintenance of amortization reserves. The Licensee shall set aside in a project amortization reserve account at the end of each fiscal year one half of the project surplus earnings, if any, in excess of the specified rate of return per annum on the net investment. To the extent that there is a deficiency of project earnings below the specified rate of return per annum for any fiscal year, the Licensee shall deduct the amount of that deficiency from the amount of any surplus earnings subsequently accumulated, until absorbed. The Licensee shall set aside one-half of the remaining surplus earnings, if any, cumulatively computed, in the project amortization reserve account. The Licensee shall maintain the amounts established in the project amortization reserve account until further order of the Commission.

The specified reasonable rate of return used in computing amortization reserves shall be calculated annually based on current capital ratios developed from an average of 13 monthly balances of amounts properly includable in the licensee's long-term debt and proprietary capital accounts as listed in the Commission's Uniform System of Accounts. The cost rate for such ratios shall be the weighted average cost of long-term debt and preferred stock for the year, and the cost of common equity shall be the interest rate on 10-year government bonds (reported as the Treasury Department's 10 year constant maturity series) computed on the monthly average for the year in question plus four percentage points (400 basis points).

Article 203. If the Licensee's project was directly benefitted by the construction work of another licensee, a permittee, or the United States on a storage reservoir or other headwater improvement during the term of the original license (including extensions of that term by annual licenses), and if those headwater benefits were not previously assessed and reimbursed to the owner of the headwater improvement, the Licensee shall reimburse the owner of the headwater improvement for those benefits, at such time as they are assessed. The benefits will be assessed in accordance with Subpart B of the regulations.

Article 204. The Commission reserves authority, in the context of a rulemaking proceeding, a statement of policy, or a proceeding specific to this license to require the Licensee at any time to conduct studies, make financial provisions, or otherwise make reasonable provisions for decommissioning of the project. The terms of this article shall be effective unless the Commission, in Docket No. RM93-23, finds that the Commission lacks statutory authority to require such actions, or otherwise determines that the article should be rescinded.

Article 205. The Commission reserves authority, in the context of any licensing, relicensing, or license or exemption amendment proceeding involving the upstream Androscoggin River Basin projects located at Mooselookmeguntic Lake, Richardson Lake, the Aziscohos Project No. 4026, the Errol Project No. 3133, the Pontook Project No. 2861, or the Kennebago Project No. 4413, to require the Licensee, in a proceeding specific to this license, to conduct studies, modify minimum flow releases, or otherwise make reasonable provisions for modifying project facilities or operation as necessary to mitigate or avoid cumulative effects identified in environmental analyses of these upstream projects.

Article 401. The Licensee shall operate the project in a run-of-river mode for the protection of fish and wildlife resources and water quality in the Androscoggin River. The Licensee shall at all times act to minimize the fluctuation of

the reservoir surface elevation by maintaining a discharge from the project so that, at any point in time, flows, as measured immediately downstream from the project tailrace, approximate the sum of inflows to the project reservoir. Run-of-river operation may be temporarily modified if required by operating emergencies beyond the control of the Licensee, or for short periods upon mutual agreement between the Licensee, the New Hampshire Fish and Game Department, and the U.S. Fish and Wildlife Service. If the flow is so modified, the Licensee shall notify the Commission as soon as possible, but no later than 10 days after each such incident.

Article 402. The Licensee shall release from the Gorham dam into the Androscoggin River a minimum flow of 200 cubic feet per second, as measured immediately below the Gorham dam, or inflow to the project reservoir, whichever is less, for the protection and enhancement of fish and wildlife resources and water quality in the bypassed reach of the Androscoggin River. This flow may be temporarily modified if required by operating emergencies beyond the control of the Licensee, or for short periods upon agreement between the Licensee, the New Hampshire Fish and Game Department, and the U.S. Fish and Wildlife Service. If the flow is so modified, the Licensee shall notify the Commission as soon as possible, but no later than 10 days after each such incident.

Article 403. Within six months from the effective date of the license, the Licensee shall file with the Commission for approval, a plan to monitor run-of-river operation and minimum flows of the project, as stipulated by articles 401 and 402, respectively, and to describe how flows will be maintained below the project when the impoundment is refilled after any maintenance and/or repairs.

The plan shall include, but not be limited to, a schedule for installing the monitoring equipment, the proposed location, design, and calibration of the monitoring equipment, the method of flow data collection, and a provision for providing flow data to the consulted agencies, within 30 days from the date of the agencies request for the data.

The Licensee shall prepare the plan after consultation with the U.S. Geological Survey, the U.S. Fish and Wildlife Service, the New Hampshire Fish and Game Department. The Licensee shall include with the plan documentation of consultation and copies of comments and recommendations on the completed plan after it has been prepared and provided to the agencies, and specific descriptions of how the agencies' comments are accommodated by the plan. The Licensee shall allow a minimum of 30 days for the agencies to comment and to make recommendations prior to filing the plan with the Commission. If the Licensee does not adopt a recommendation, the filing shall include the Licensee's reasons, based on project-specific information.

The Commission reserves the right to require changes to the monitoring plan. Upon Commission approval, the Licensee shall implement the monitoring plan, including any changes required by the Commission.

If the results of monitoring indicate that changes in project structures or operations are necessary to ensure maintenance of run-of-river operation or maintenance of minimum flows, the Commission may direct the Licensee to modify project structures or operations.

Article 404. Authority is reserved to the Commission to require the licensee to construct, operate, and maintain, or provide for the construction, operation, and maintenance of, such fishways as may be prescribed by the Secretary of the Interior.

Article 405. Within six months of the effective date of the license, the Licensee shall file with the Commission for approval, a plan to monitor dissolved oxygen (DO) levels and temperature of the Androscoggin River upstream and downstream of the project. The purpose of this monitoring plan is to ensure that stream flows, as measured immediately upstream of the impoundment, downstream of the project dam, and downstream of the project tailrace, maintain a DO content of no less than 75 percent saturation.

The monitoring plan shall include a schedule for:

(1) implementation of the monitoring plan;

(2) consultation with the appropriate federal and state agencies concerning the results of the monitoring; and

(3) filing the results, agency comments, and Licensee's response to agency comments with the Commission.

The Licensee shall prepare the monitoring plan after consultation with the New Hampshire Department of Environmental Services, the New Hampshire Fish and Game Department, and the U.S. Fish and Wildlife Service. The Licensee shall include with the monitoring plan documentation of consultation and copies of comments and recommendations on the completed plan after it has been prepared and provided to the agencies, and specific descriptions of how the agencies' comments are accommodated by the monitoring plan. The Licensee shall allow a minimum of 30 days for the agencies to comment and to make recommendations prior to filing the monitoring plan with the Commission. If the Licensee does not adopt a recommendation, the filing shall include the Licensee's reasons, based on project-specific information.

The Commission reserves the right to require changes to the monitoring plan. Upon Commission approval, the Licensee shall implement the monitoring plan, including any changes required by the Commission.

If the results of monitoring indicate that changes in project structures or operations are necessary to ensure maintenance of the state DO standard, the Commission may direct the Licensee to modify project structures or operations.

Article 406. The Licensee, within six months from the effective date of this license, shall file, for Commission approval, functional design drawings of a trashrack and downstream fish bypass facility to reduce the entrainment of resident fish, together with a schedule to construct/install the facilities before operation of the project.

This filing shall include, but not be limited to specifications of:

(1) a fish guidance screen angled from the river current towards a bypass sluice;

(2) the size of the openings between the trashrack bars (not to exceed 1 inch);

(3) the maximum intake approach velocity;

(4) a bypass sluice;

(5) a plunge pool located at the base of the dam;

(6) the methods and a schedule for installing the facilities; and

(7) a plan for the operation and maintenance of the facilities.

The Licensee shall prepare the aforementioned drawings and plan after consultation with the New Hampshire Fish and Game Department and the U.S. Fish and Wildlife Service. The Licensee shall include with the drawings and plan documentation of consultation and copies of comments and recommendations on the drawings, schedule, and completed plan after they have been prepared and provided to the agencies, and specific descriptions of how the agencies' comments are accommodated by the Licensee's facilities. The Licensee shall allow a minimum of 30 days for the agencies to comment and to make recommendations prior to filing the drawings, schedule, and plan with the Commission. If the Licensee does not adopt a recommendation, the filing shall include the Licensee's reasons, based on project-specific information.

The Commission reserves the right to require changes to the proposed facilities, schedule, and plan. Upon Commission approval, the Licensee shall implement the proposal, including any changes required by the Commission.

Article 407. The Licensee shall implement the provisions of the "Programmatic Agreement Among the Federal Energy Regulatory Commission, the Advisory Council on Historic Preservation, and the New Hampshire Division for Historic Preservation, for Managing Historic Properties Likely to be Affected by Continuing to Operate the Sawmill Project, Project No. 2422, Cross Power Project, Project No. 2326, Cascade Project, Project No. 2327, Gorham Project, Project No. 2311, Shelburne Project, Project No. 2300, J. Brodie Smith Project, Project No. 2287, and Gorham Project, Project No. 2288, All Located on the Androscoggin River" executed on November 18, 1993. The Commission reserves the authority to require changes to the Cultural Resources Management Plan or plans at any time during the term of the license.

Article 408. Within one year from the effective date of this license, the Licensee shall develop and file, for Commission approval, a shore land protection plan. The plan shall be designed to protect the aesthetics of and public access to the project's shore lands.

The plan shall include, but not be limited to:

(1) maps delineating the shore land protective buffer zone area;

(2) the method by which the buffer zone would be maintained, including any cost and method of acquiring (fee or less-than-fee) the various land parcels that comprise the buffer, and the criteria used for selecting the buffer zone widths; and

(3) provisions for: (a) maintaining prescribed minimum-width, no tree-cutting, buffer zones around the project's shores, public roads, and private property; (b) carefully planning any timber clearing activities adjacent to the buffer zones, including giving special consideration to the scale and pattern of any areas where cutting is performed; (c) minimizing openings in shoreline vegetation where future recreational facility development requires construction closer to the shoreline than the prescribed minimum-width buffer zone; (d) maintaining the project transmission line right-of-ways in a way that minimizes adverse aesthetic effects caused by the clearing of vegetation; (e) landscape screening, on a as-needed basis, for all storage buildings, parking areas, and other adverse visual features that are visible from the shoreline, impoundment, or other adjacent critical viewpoints. Further, the licensee should conduct a periodic inspection of project lands to identify any features in

need of screening or general clean-up, and subsequently take remedial action.

The Licensee shall prepare the plan after consultation with the Town of Gorham, City of Berlin, New Hampshire Fish and Game Department, and the National Park Service. The Licensee shall include with the plan, documentation of consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to the agencies, and specific descriptions of how the agencies, comments are accommodated by the plan. The Licensee shall allow a minimum of 30 days for the agencies to comment and to make recommendations before filing the plan with the Commission. If the Licensee does not adopt a recommendation, the filing shall include the Licensee's reasons, based on project-specific information.

The Commission reserves the right to require changes to the plan. Upon Commission approval, the Licensee shall implement the plan, including any changes required by the Commission.

Article 409. Within six months from the effective date of this license, the Licensee shall develop and file, for Commission approval, a recreation plan to provide additional public access to the south side of the impoundment and public access for those wishing to float down to the Shelburne impoundment.

The plan shall include, but not be limited to:

(1) provisions for adding informational signage at the existing parking area, at the Route 2 entry point, and along Hogan Road at points that are currently being used to informally access project waters;

(2) provisions for a future canoe portage;

(3) a system for monitoring recreational use (especially fishing activity) and provisions for modifying existing facilities when use begins to exceed capacity;

(4) a discussion of who would maintain the public use area;

(5) provisions for the disabled that comply with the Americans With Disabilities Act (ADA) and;

(6) a schedule for completing items (1) through (5).

The Licensee shall prepare the plan after consultation with the New Hampshire Fish and Game Department, the National Park Service, and any applicable current landowners. The Licensee shall include with the plan, documentation of consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to the agencies, and

specific descriptions of how the agencies' comments are accommodated by the plan. The Licensee shall allow a minimum of 30 days for the agencies to comment and to make recommendations before filing the plan with the Commission. If the Licensee does not adopt a recommendation, the filing shall include the Licensee's reasons, based on project-specific information.

The Commission reserves the right to require changes to the plan. Upon Commission approval, the Licensee shall implement the plan, including any changes required by the Commission.

Article 410. (a) In accordance with the provisions of this article, the Licensee shall have the authority to grant permission for certain types of use and occupancy of project lands and waters and to convey certain interests in project lands and waters for certain types of use and occupancy, without prior Commission approval. The Licensee may exercise the authority only if the proposed use and occupancy is consistent with the purposes of protecting and enhancing the scenic, recreational, and other environmental values of the project. For those purposes, the Licensee shall also have continuing responsibility to supervise and control the use and occupancies for which it grants permission, and to monitor the use of, and ensure compliance with the covenants of the instrument of conveyance for, any interests that it has conveyed, under this article. If a permitted use and occupancy violates any condition of this article or any other condition imposed by the Licensee for protection and enhancement of the project's scenic, recreational, or other environmental values, or if a covenant of a conveyance made under the authority of this article is violated, the Licensee shall take any lawful action necessary to correct the violation. For a permitted use or occupancy, that action includes, if necessary, canceling the permission to use and occupy the project lands and waters and requiring the removal of any non-complying structures and facilities.

(b) The type of use and occupancy of project lands and waters for which the Licensee may grant permission without prior Commission approval are: (1) landscape plantings; (2) non-commercial piers, landings, boat docks, or similar structures and facilities that can accommodate no more than 10 watercraft at a time and where said facility is intended to serve single-family type dwellings; and (3) embankments, bulkheads, retaining walls, or similar structures for erosion control to protect the existing shoreline. To the extent feasible and desirable to protect and enhance the project's scenic, recreational, and other environmental values, the Licensee shall require multiple use and occupancy of facilities for access to project lands or waters. The Licensee shall also ensure, to the satisfaction of the Commission's authorized representative, that the use and occupancies for which it grants permission are maintained in good repair and comply with applicable state and local health and

safety requirements. Before granting permission for construction of bulkheads or retaining walls, the Licensee shall: (1) inspect the site of the proposed construction, (2) consider whether the planting of vegetation or the use of riprap would be adequate to control erosion at the site, and (3) determine that the proposed construction is needed and would not change the basic contour of the reservoir shoreline. To implement this paragraph (b), the Licensee may, among other things, establish a program for issuing permits for the specified types of use and occupancy of project lands and waters, which may be subject to the payment of a reasonable fee to cover the Licensee's costs of administering the permit program. The Commission reserves the right to require the Licensee to file a description of its standards, guidelines, and procedures for implementing this paragraph (b) and to require modification of those standards, guidelines, or procedures.

(c) The Licensee may convey easements or rights-of-way across, or leases of, project lands for: (1) replacement, expansion, realignment, or maintenance of bridges and roads for which all necessary state and federal approvals have been obtained; (2) storm drains and water mains; (3) sewers that do not discharge into project waters; (4) minor access roads; (5) telephone, gas, and electric utility distribution lines; (6) non-project overhead electric transmission lines that do not require erection of support structures within the project boundary; (7) submarine, overhead, or underground major telephone distribution cables or major electric distribution lines (69-kV or less); and (8) water intake or pumping facilities that do not extract more than one million gallons per day from a project reservoir. No later than January 31 of each year, the Licensee shall file three copies of a report briefly describing for each conveyance made under this paragraph (c) during the prior calendar year, the type of interest conveyed, the location of the lands subject to the conveyance, and the nature of the use for which the interest was conveyed.

(d) The Licensee may convey fee title to, easements or rights-of-way across, or leases of project lands for: (1) construction of new bridges or roads for which all necessary state and federal approvals have been obtained; (2) sewer or effluent lines that discharge into project waters, for which all necessary federal and state water quality certification or permits have been obtained; (3) other pipelines that cross project lands or waters but do not discharge into project waters; (4) non-project overhead electric transmission lines that require erection of support structures within the project boundary, for which all necessary federal and state approvals have been obtained; (5) private or public marinas that can accommodate no more than 10 watercraft at a time and are located at least one-half mile from any other private or public marina; (6) recreational development consistent with an approved Exhibit R or approved report on recreational resources of an Exhibit E; and

(7) other uses, if: (i) the amount of land conveyed for a particular use is five acres or less; (ii) all of the land conveyed is located at least 75 feet, measured horizontally, from the edge of the project reservoir at normal maximum surface elevation; and (iii) no more than 50 total acres of project lands for each project development are conveyed under this clause (d)(7) in any calendar year. At least 45 days before conveying any interest in project lands under this paragraph (d), the Licensee must submit a letter to the Director, Office of Hydropower Licensing, stating its intent to convey the interest and briefly describing the type of interest and location of the lands to be conveyed (a marked Exhibit G or K map may be used), the nature of the proposed use, the identity of any federal or state agency official consulted, and any federal or state approvals required for the proposed use. Unless the Director, within 45 days from the filing date, requires the Licensee to file an application for prior approval, the Licensee may convey the intended interest at the end of that period.

(e) The following additional conditions apply to any intended conveyance under paragraph (c) or (d) of this article:

(1) Before conveying the interest, the Licensee shall consult with federal and state fish and wildlife or recreation agencies, as appropriate, and the State Historic Preservation Officer.

(2) Before conveying the interest, the Licensee shall determine that the proposed use of the lands to be conveyed is not inconsistent with any approved Exhibit R or approved report on recreational resources of an Exhibit E; or, if the project does not have an approved Exhibit R or approved report on recreational resources, that the lands to be conveyed do not have recreational value.

(3) The instrument of conveyance must include covenants running with the land adequate to ensure that: (i) the use of the lands conveyed shall not endanger health, create a nuisance, or otherwise be incompatible with overall project recreational use; and (ii) the grantee shall take all reasonable precautions to insure that the construction, operation, and maintenance of structures or facilities on the conveyed lands will occur in a manner that will protect the scenic, recreational, and environmental values of the project.

(4) The Commission reserves the right to require the Licensee to take reasonable remedial action to correct any violation of the terms and conditions of this article, for the protection and enhancement of the project's scenic, recreational, and other environmental values.

(f) The conveyance of an interest in project lands under this article does not in itself change the project boundaries. The project boundaries may be changed to exclude land conveyed under this article only upon approval of revised Exhibit G or K drawings (project boundary maps) reflecting exclusion of that land. Lands conveyed under this article will be excluded from the project only upon a determination that the lands are not necessary for project purposes, such as operation and maintenance, flowage, recreation, public access, protection of environmental resources, and shoreline control, including shoreline aesthetic values. Absent extraordinary circumstances, proposals to exclude lands conveyed under this article from the project shall be consolidated for consideration when revised exhibit G or K drawings would be filed for approval for other purposes.

(g) The authority granted to the Licensee under this article shall not apply to any part of the public lands and reservations of the United States included within the project boundary.

(F) The Licensee shall serve copies of any Commission filing required by this order on any entity specified in this order to be consulted on matters related to that filing. Proof of service on these entities must accompany the filing with the Commission.

(G) This order is final unless a request for rehearing is filed within 30 days of the date of issuance of this order, as provided in Section 313 of the FPA. The filing of a request for rehearing does not operate as a stay of the effective date of this order or of any other date specified in this order, except as specifically ordered by the Commission. The Licensee's failure to file a request for rehearing shall constitute acceptance of this order.

By the Commission.

(S E A L)

Linwood A. Watson, Jr.
Acting Secretary.

Document Content(s)

APPENDIX F

EXHIBIT F

CEII MATERIALS
THIS MATERIAL IS CRITICAL ENERGY INFRASTRUCTURE INFORMATION (CEII). MEMBERS OF THE PUBLIC MAY OBTAIN NONPUBLIC OR PRIVILEGED INFORMATION BY SUBMITTING A FREEDOM OF INFORMATION ACT (FOIA) REQUEST.

APPENDIX G

EXHIBIT G

/023002/gorham500.dwg

N

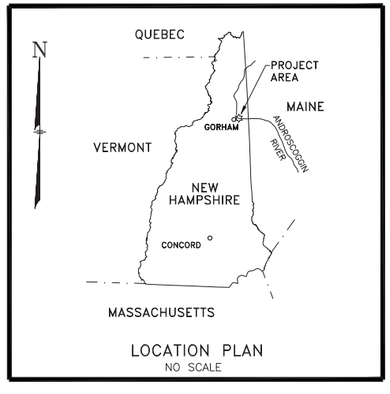
16°±

MATCH LINE

SEE EXHIBIT G
SHEET 2 OF 3

SEE EXHIBIT G
SHEET 3 OF 3

NOTE:
THIS DRAWING WAS CREATED USING CADD EQUIPMENT—NO MANUAL REVISIONS



LOCATION PLAN
NO SCALE

GRAPHIC SCALE

500 0 250 500 1000 2000

(IN FEET)
1 inch = 500 ft.

THIS PRINT MAY BE A REDUCED COPY OF THE ORIGINAL. WHEN NECESSARY TO SCALE USE GRAPHIC SCALE ABOVE.

THIS PLAN IS PART OF THE APPLICATION FOR A LICENSE MADE BY THE UNDERSIGNED THIS DAY OF 1991

BY : _____
VICE PRESIDENT
PUBLIC SERVICE COMPANY OF NEW HAMPSHIRE

EXHIBIT G SHEET 1 OF 3

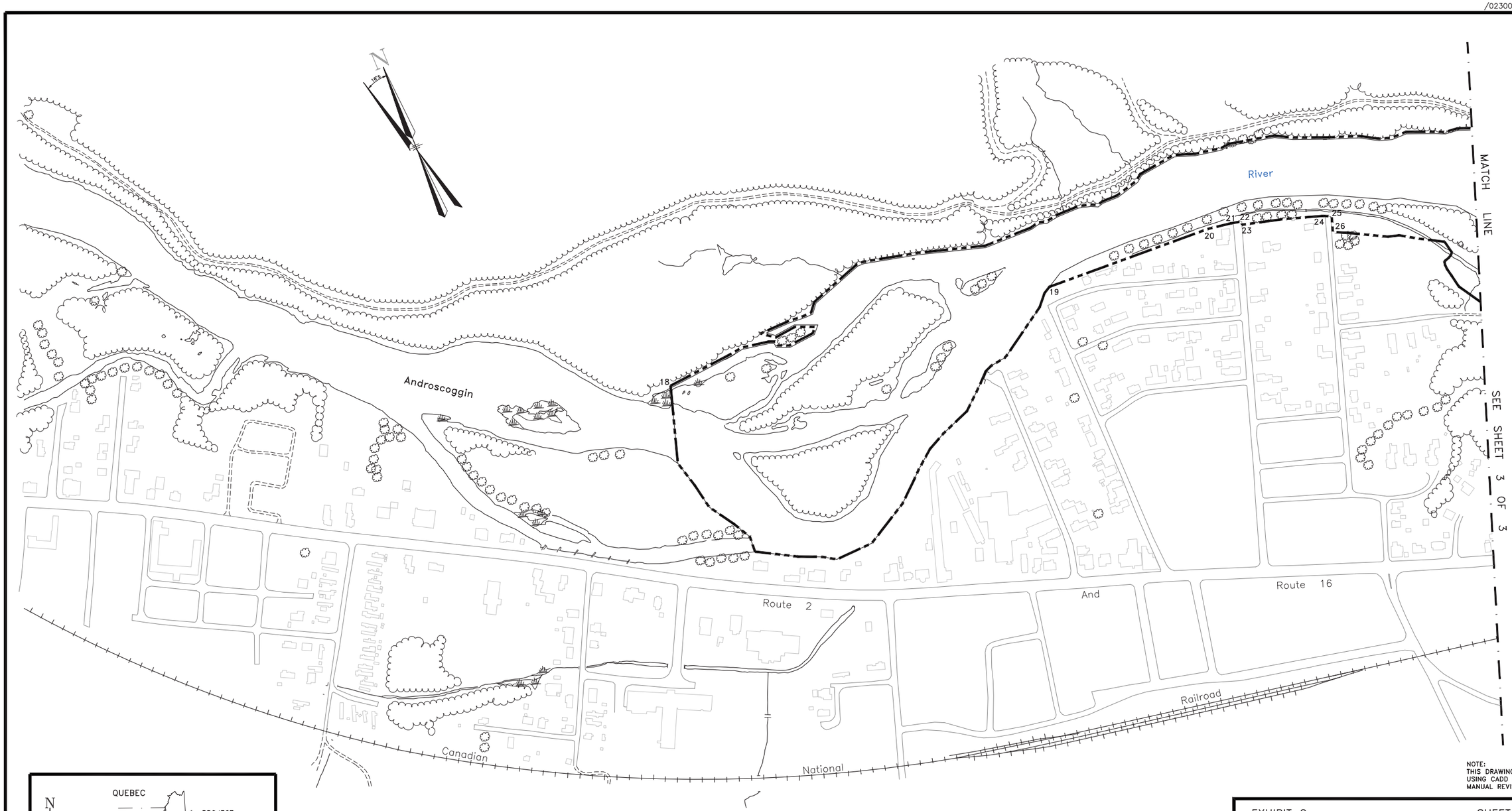
GORHAM PROJECT

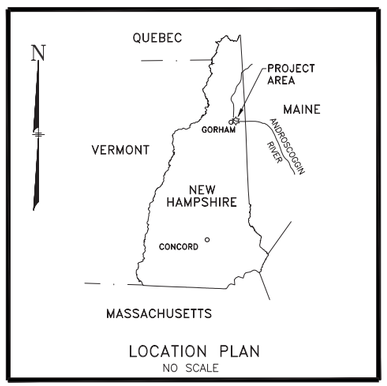
MAP OF PROJECT AREA

PUBLIC SERVICE COMPANY OF NEW HAMPSHIRE
MANCHESTER, N.H.

LAST DATE PLOTTED: 12/17/91

/023002/gorham/1.dwg





LOCATION PLAN
NO SCALE

NOTE:
THIS DRAWING WAS CREATED USING CADD EQUIPMENT-NO MANUAL REVISIONS

LEGEND:

PROJECT BOUNDARY

GRAPHIC SCALE

200 0 100 200 400 800

(IN FEET)
1 inch = 200 ft.

THIS PRINT MAY BE A REDUCED COPY OF THE ORIGINAL. WHEN NECESSARY TO SCALE USE GRAPHIC SCALE ABOVE.

THIS PLAN IS PART OF THE APPLICATION FOR A LICENSE MADE BY THE UNDERSIGNED THIS DAY OF

BY : _____
VICE PRESIDENT
PUBLIC SERVICE COMPANY OF NEW HAMPSHIRE

EXHIBIT G SHEET 2 OF 3

GORHAM PROJECT

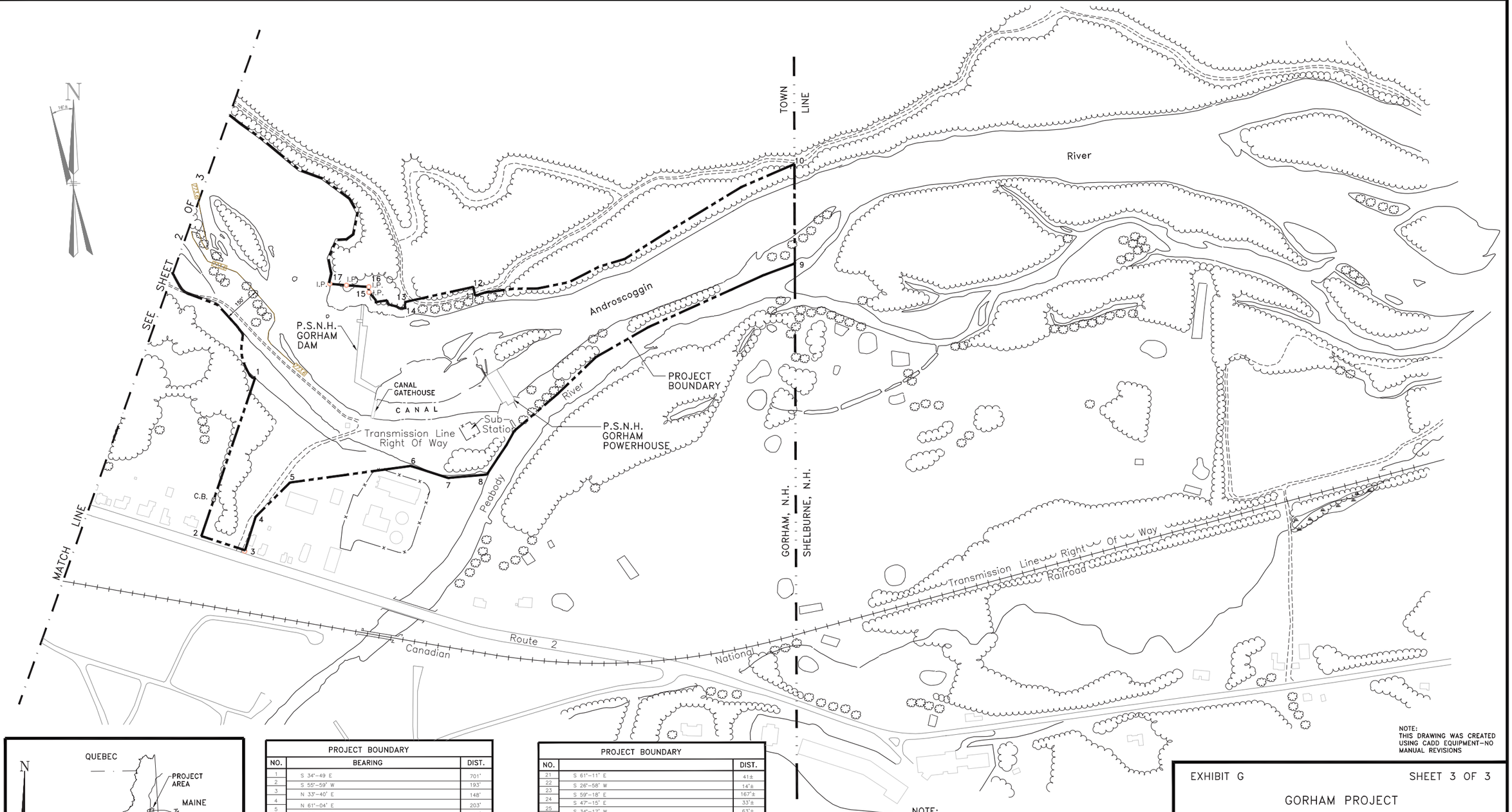
MAP OF PROJECT AREA

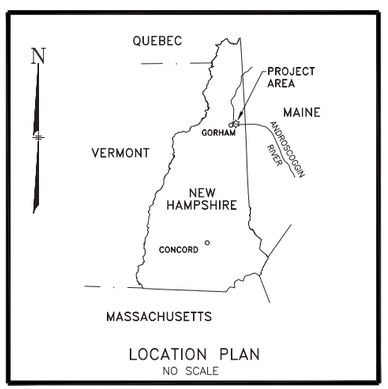
PUBLIC SERVICE COMPANY OF NEW HAMPSHIRE
MANCHESTER, N.H.

REVISED 4/2000

FERC #2288-34

/023002/gorham/2.dwg





LOCATION PLAN
NO SCALE

PROJECT BOUNDARY		
NO.	BEARING	DIST.
1	S 34°-49' E	701'
2	S 55°-59' W	193'
3	N 33°-40' E	148'
4	N 61°-04' E	203'
5	S 81°-04' E	512'
6	S 56°-05' E	164'
7	S 78°-58' E	163'
8	PROJECT BOUNDARY IS AT NORMAL WATER LINE ALONG NORTH BANK OF THE PEABODY RIVER	
9	PROJECT BOUNDARY IS AT TOWN LINE	
10	TOP OF BANK	1440'±
11	N 03°-07' E	38'
12	N 86°-27' W	292'
13	S 19°-28' W	25'
14	PROJECT BOUNDARY IS AT CONTOUR ELEV. 780' U.S.G.S. DATUM TO AN IRON PIN	
15	N 21° E	19'
16	N 69°-14' W	164'
17	PROJECT BOUNDARY IS AT CONTOUR ELEV. 780' U.S.G.S. DATUM	
18	PROJECT BOUNDARY IS AT CONTOUR ELEV. 773.6' U.S.G.S. DATUM	
19	S 71°-33' E	686±'
20		
21	S 65°-06' E	99'±

PROJECT BOUNDARY		
NO.		DIST.
21	S 61°-11' E	41±
22	S 26°-58' W	14'±
23	S 59°-18' E	167'±
24	S 47°-15' E	33'±
25	S 34°-17' W	63'±
26	PROJECT BOUNDARY IS OFFSET 150' FROM CONTOUR ELEV. = 773.6 (U.S.G.S. DATUM)	
1		

LEGEND:

PROJECT BOUNDARY

GRAPHIC SCALE

200 0 100 200 400 800

(IN FEET)
1 inch = 200 ft.

THIS PRINT MAY BE A REDUCED COPY OF THE ORIGINAL. WHEN NECESSARY TO SCALE USE GRAPHIC SCALE ABOVE.

NOTE:
THIS DRAWING WAS CREATED USING CADD EQUIPMENT-NO MANUAL REVISIONS

NOTE:

1. THE APPLICANT OWNS BY DEED ALL LANDS NECESSARY TO OPERATE AND MAINTAIN THE EXISTING PROJECT.
2. METES AND BOUNDS HAVE NOT BEEN FIELD SURVEYED.
3. THE TOWN OF GORHAM HAS THE RIGHT BY EASEMENT TO OPERATE AND MAINTAIN THE PIPELINES TO AND FROM THEIR POLLUTION CONTROL FACILITY, LOCATED IN AND ADJACENT TO THE PROJECT BOUNDARY.

THIS PLAN IS PART OF THE APPLICATION FOR A LICENSE MADE BY THE UNDERSIGNED THIS DAY OF

BY : _____
VICE PRESIDENT
PUBLIC SERVICE COMPANY OF NEW HAMPSHIRE

EXHIBIT G SHEET 3 OF 3

GORHAM PROJECT

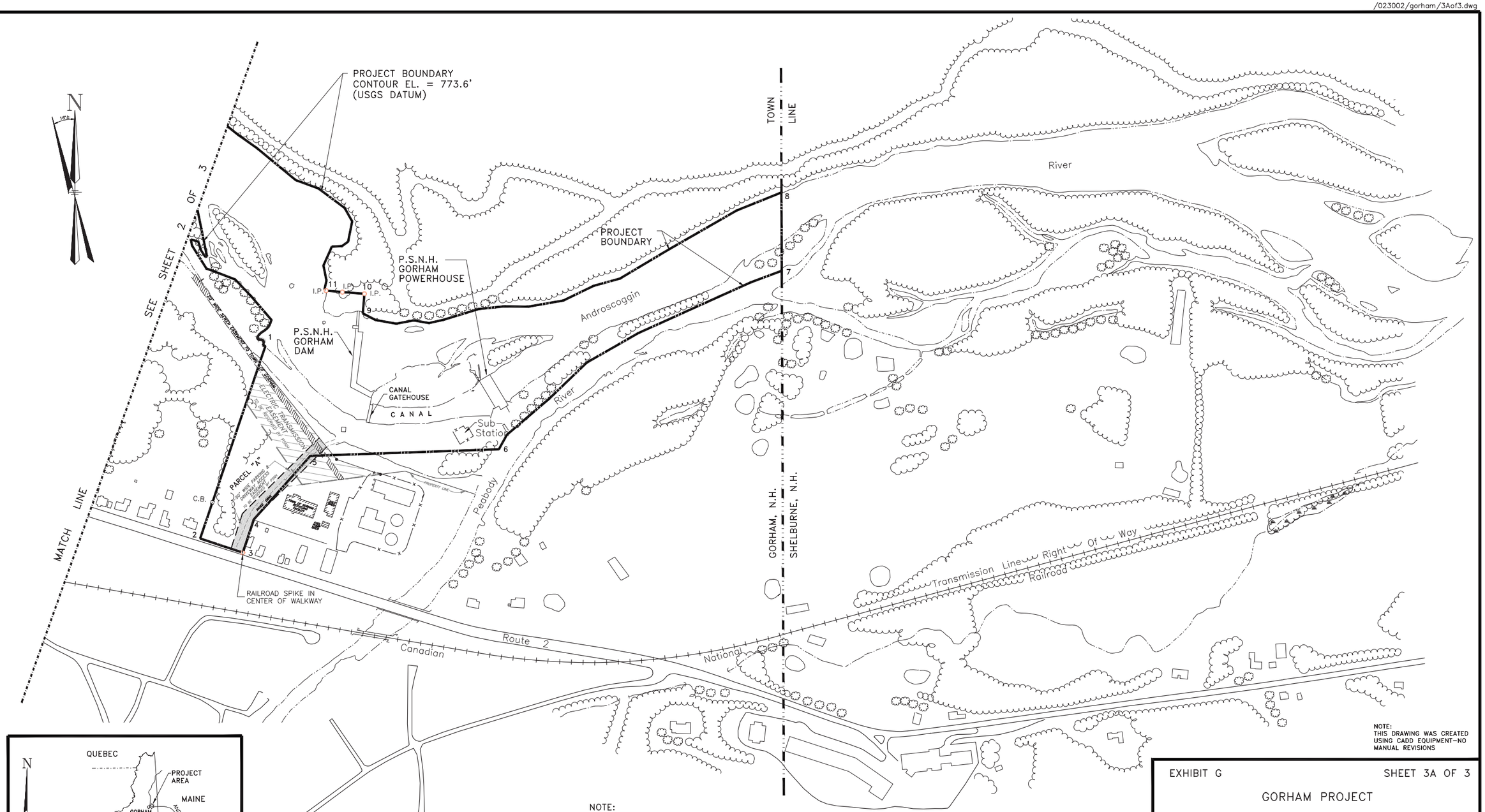
MAP OF PROJECT AREA

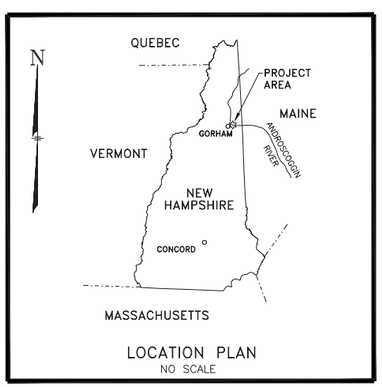
PUBLIC SERVICE COMPANY OF NEW HAMPSHIRE
MANCHESTER, N.H.

REVISED 4/2000

FERC #2288-35

/023002/gorham/3Aof3.dwg





LOCATION PLAN
NO SCALE

PROJECT BOUNDARY		
NO.	BEARING	DIST.
1	S 34°-43' E	870'
2	S 55°-40' W	193'
3	N 34°-20' E	150'
4	N 57°-40' E	364'
5	S 76°-00' E	807'
6	PROJECT BOUNDARY IS AT NORMAL WATER LINE ALONG NORTH BANK OF THE PEABODY RIVER	
7	PROJECT BOUNDARY IS AT TOWN LINE	
8	PROJECT BOUNDARY IS AT NORMAL WATER LINE ALONG NORTH BANK OF ANDROSCOGGIN RIVER	
9	N 20°-46' E	84'
10	N 69°-14' W	164'
11	PROJECT BOUNDARY IS AT CONTOUR ELEV. = 773.6 FEET (U.S.G.S. DATUM)	
1		

NOTE:
1. THE APPLICANT OWNS BY DEED ALL LANDS NECESSARY TO OPERATE AND MAINTAIN THE EXISTING PROJECT.
2. METES AND BOUNDS HAVE NOT BEEN FIELD SURVEYED.
3. THE TOWN OF GORHAM HAS THE RIGHT BY EASEMENT TO OPERATE AND MAINTAIN THE PIPELINES TO AND FROM THEIR POLLUTION CONTROL FACILITY, LOCATED IN AND ADJACENT TO THE PROJECT BOUNDARY.

GRAPHIC SCALE

200 0 100 200 400 800

(IN FEET)
1 inch = 200 ft.

THIS PRINT MAY BE A REDUCED COPY OF THE ORIGINAL. WHEN NECESSARY TO SCALE USE GRAPHIC SCALE ABOVE.

LEGEND:

PROJECT BOUNDARY

THIS PLAN IS PART OF THE APPLICATION FOR A LICENSE MADE BY THE UNDERSIGNED THIS DAY OF 1991

BY : _____
VICE PRESIDENT
PUBLIC SERVICE COMPANY OF NEW HAMPSHIRE

NOTE:
THIS DRAWING WAS CREATED USING CADD EQUIPMENT—NO MANUAL REVISIONS

EXHIBIT G SHEET 3A OF 3

GORHAM PROJECT

MAP OF PROJECT AREA

PUBLIC SERVICE COMPANY OF NEW HAMPSHIRE
MANCHESTER, N.H.

LAST DATE PLOTTED: 3/18/98

APPENDIX H

CONSULTATION

United States Department of the Interior

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

In Reply Refer To: February 01, 2019
Consultation Code: 05E1NE00-2018-SLI-2073
Event Code: 05E1NE00-2019-E-01781
Project Name: Gorham Hydroelectric Project FERC No. 2288

Subject: Updated list of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

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

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Official Species List

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

This species list is provided by:

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

Project Summary

Consultation Code: 05E1NE00-2018-SLI-2073

Event Code: 05E1NE00-2019-E-01781

Project Name: Gorham Hydroelectric Project FERC No. 2288

Project Type: DAM

Project Description: Public Service Company of New Hampshire (PSNH) is filing with the Federal Energy Regulatory Commission (FERC or the Commission) its Notification of Intent (NOI) to re-license the 2.25 MW Gorham Hydroelectric Project (FERC Project No. 2288). The Gorham Hydroelectric Project consists of a 20-foot-high timber crib dam, a reservoir with a surface area of 32 acres, a spillway, a power canal, a powerhouse containing four generating units, located on the Androscoggin River in Coos County, New Hampshire. PSNH is not proposing to add capacity or make any physical modifications to the Project under the new license. The current license will expire on July 31, 2024.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/44.390213622937N71.16825638241306W

Counties: Coos, NH

Endangered Species Act Species

There is a total of 2 threatened, endangered, or candidate species on this species list.

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

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

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

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

Mammals

NAME	STATUS
Canada Lynx *Lynx canadensis* Population: Wherever Found in Contiguous U.S. There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/3652	Threatened
Northern Long-eared Bat *Myotis septentrionalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Threatened

Critical habitats

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

United States Department of the Interior

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

In Reply Refer To: June 12, 2018
Consultation Code: 05E1NE00-2018-SLI-2073
Event Code: 05E1NE00-2018-E-04802
Project Name: Gorham Hydroelectric Project FERC No. 2288

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

To Whom It May Concern:

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

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Official Species List

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

This species list is provided by:

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

Project Summary

Consultation Code: 05E1NE00-2018-SLI-2073

Event Code: 05E1NE00-2018-E-04802

Project Name: Gorham Hydroelectric Project FERC No. 2288

Project Type: DAM

Project Description: Public Service Company of New Hampshire (PSNH) is filing with the Federal Energy Regulatory Commission (FERC or the Commission) its Notification of Intent (NOI) to re-license the 2.25 MW Gorham Hydroelectric Project (FERC Project No. 2288). The Gorham Hydroelectric Project consists of a 20-foot-high timber crib dam, a reservoir with a surface area of 32 acres, a spillway, a power canal, a powerhouse containing four generating units, located on the Androscoggin River in Coos County, New Hampshire. PSNH is not proposing to add capacity or make any physical modifications to the Project under the new license. The current license will expire on July 31, 2024.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/44.390213622937N71.16825638241306W

Counties: Coos, NH

Endangered Species Act Species

There is a total of 2 threatened, endangered, or candidate species on this species list.

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

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

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

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

Mammals

NAME	STATUS
Canada Lynx *Lynx canadensis* Population: Wherever Found in Contiguous U.S. There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/3652	Threatened
Northern Long-eared Bat *Myotis septentrionalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Threatened

Critical habitats

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

From: Lamb, Amy
To: Kayla Easler
Cc: Henderson, Carol; Andy Qua
Subject: RE: NHB review: NHB19-0070
Date: Tuesday, January 29, 2019 1:30:13 PM

Hello Kayla,

Thank you for the additional information about the Gorham (NHB18-3938) and Canaan, VT / Stewartstown, NH (NHB19-0070) projects. Below are my comments for each project:

Canaan, VT / Stewartstown, NH (NHB19-0070):

There is a record in the NHB database for an *acidic riverbank outcrop* natural community immediately below the dam. Our records indicate that it is relatively weedy with low botanical diversity. Unfortunately, the only information we have about this occurrence dates from 1984. We do not know the cause of the low diversity at this site, or the relationship between pre- and post-dam water levels and historical/current conditions of the natural community. Additionally, there have been no recent surveys (within the last 35 years) to verify current conditions at this natural community. Based on all of these reasons, I am unable to assert that continued dam operations would have no significant effects on this community.

Also at/near this location is a record for satiny willow (*Salix pellita*). According to our records it is growing at the edge of an agricultural field somewhere north of the dam. Again, we do not have pre- and post-dam data for the plant at this location, so it is difficult to know what the effects of the dam may be on this species. It does tend to grow on river, lake, and stream shores; water level or other hydrological manipulations could affect this species. This occurrence is one of only two recently documented occurrences of the species in NH; the only non-historical/extant record (<20 years old) for this state endangered species is elsewhere in Stewartstown, dating from 2015. Therefore, I cannot say with confidence that the dam has not and will not continue to have a significant impact on this species.

Gorham (NHB18-3938):

There is a record for a *sugar maple - silver maple - white ash floodplain forest*. There is an area of this community west (upstream of) the dam, as well as areas to the east (downstream of) the dam. Portions of this natural community are described as having evident disturbance and patchy distribution of invasive species while records indicate that to the east "was a typical, non-disturbed patch of high terrace floodplain forest." Survey information indicates that logging history, the golf course, and flood action may influence the characteristics of these communities. The presence of the dam may contribute to the current condition of these communities, for example maintaining the headpond at elevation 96.75 feet may alter downstream flood regimes to unknown effect. However, the inflow from the Peabody River may lessen influence from the dam. This location is one of only two documented exemplary *sugar maple - silver maple - white ash floodplain forests* in the state, so without a study to determine effects of the dam on floodplain forests in the area, I cannot say with certainty that the dam does not threaten this natural community.

There are also records for ovoid spikesedge (*Eleocharis ovata*) (associated with a pond upstream) and pink shinleaf (*Pyrola asarifolia* ssp. *asarifolia*)(associated with the Peabody River). It is unlikely that the project is negatively impacting these species, as the records are not associated with the Androscoggin River.

Amy Lamb
Ecological Information Specialist
(603) 271-2834
amy.lamb@dncr.nh.gov

NH Natural Heritage Bureau
DNCR - Forests & Lands
172 Pembroke Rd
Concord, NH 03301

From: Kayla Easler [mailto:Kayla.Easler@KleinschmidtGroup.com]
Sent: Thursday, January 24, 2019 10:52 AM
To: Lamb, Amy
Cc: Tuttle, Kim; Henderson, Carol; Andy Qua
Subject: RE: NHB review: NHB19-0070

Amy,

Attached are the project description and operations for the Gorham (NHB18-3938) and Canaan (NHB19-0070) project.

The first part of the existing Gorham powerhouse was built in 1909. Additional parts of the Gorham Project were built from 1917 to 1923 in stages by the Twin State Gas and Electric Company. In addition, the dam was enlarged several times, in 1903, 1927-1928, and 1958-1959. The Gorham Project was acquired by PSNH in 1943.

The first part of the existing Canaan dam was originally constructed at the project site in 1927 and was reconstructed in 1943 after the original timber crib dam washed out. A powerhouse was also constructed, and project operation began in 1943.

Thank you,

Kayla A. Easler
Regulatory Coordinator
Kleinschmidt
Direct: (207) 416-1271
www.KleinschmidtGroup.com
*Providing **practical** solutions for **complex** problems affecting energy, water, and the environment*

From: Lamb, Amy <Amy.Lamb@dncr.nh.gov>

Sent: Thursday, January 24, 2019 10:15 AM
To: Kayla Easler <Kayla.Easler@KleinschmidtGroup.com>
Cc: Tuttle, Kim <Kim.Tuttle@wildlife.nh.gov>
Subject: RE: NHB review: NHB19-0070

Kayla,

We do not have current information about the natural community or rare plant species within the project area, nor a set of historic data to compare with existing conditions. Therefore, we can't comment on any effects the dam might be having on these resources. How long has the dam been present at this location?

Amy Lamb
Ecological Information Specialist
(603) 271-2834
amy.lamb@dncr.nh.gov

NH Natural Heritage Bureau
DNCR - Forests & Lands
172 Pembroke Rd
Concord, NH 03301

From: Kayla Easler [mailto:Kayla.Easler@KleinschmidtGroup.com]
Sent: Thursday, January 24, 2019 8:56 AM
To: Lamb, Amy
Cc: Tuttle, Kim
Subject: RE: NHB review: NHB19-0070

Amy and Kim,

Like my email for the Hooksett Development I am looking to what additional information would like on the project? As I put in the project description, Central Rivers Power (CRP) is applying for Low Impact Hydropower Institute (LIHI)Certification and as part of the process, CRP needs to reach out to agencies and update their project information with the most up-to-date information. No changes to the Project are expected at this time.

Along with getting the most up-to-date information on listed species, LIHI is looking for a written response from the agencies, showing the continued operation of the project will not contribute to the status of the species and that no significant affect is expected. We ill need a response for all three project, Gorham, Canaan, and Hooksett.

If you have questions, feel free to call me at 207-416-1271

Kayla A. Easler
Regulatory Coordinator
Kleinschmidt
Direct: (207) 416-1271
www.KleinschmidtGroup.com

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From: Lamb, Amy <Amy.Lamb@dncr.nh.gov>
Sent: Friday, January 18, 2019 12:29 PM
To: Kayla Easler <Kayla.Easler@KleinschmidtGroup.com>
Cc: Tuttle, Kim <Kim.Tuttle@wildlife.nh.gov>
Subject: NHB review: NHB19-0070

Attached, please find the review we have completed. If your review memo includes potential impacts to plants or natural communities please contact me for further information. If your project had potential impacts to wildlife, please contact NH Fish and Game at the phone number listed on the review.

Best,
Amy

Amy Lamb
Ecological Information Specialist

NH Natural Heritage Bureau
DNCR - Forests & Lands
172 Pembroke Rd
Concord, NH 03301
603-271-2834

Request for NHB Review of "Potential Impacts" from the NHB DataCheck Tool

NHB File Number: NHB18-3938
Data Requested: 12/28/2018

Requested By:

Name: Kayla Easler
141 Main Street, P.O. Box 650
Pittsfield, ME 04967
E-mail: kayla.easler@kleinschmidtgroup.com
Phone: 207-416-1271

Project Location:

Town: Gorham, Shelburne
Description: Powerhouse Road, Gorham, NH

Payment Information. These fields MUST be filled out.

Check Number: _____

Name of Account: _____

(as printed on the check)

Enclose this completed form with a check in the amount of $25, made out to "Treasurer, State of NH".

Send the check and the completed form to the following address:

DRED - NHB
NHB Reviews
172 Pembroke Road
Concord, NH 03301

Kleinschmidt

January 9, 2018

VIA-EMAIL

Gregg Comstock
Supervisor, Water Quality Planning Section
NH Department of Environmental Services
29 Hazen Drive, P.O. Box 95
Concord, NH 03302-0095

Gorham Hydroelectric Project (FERC No. 2288)
LIHI application Project Review of Continued Use

Dear Gregg:

The following is a request for review of water quality resources for the Low Impact Hydropower Institute (LIHI) certification application for Central Rivers Power: Gorham Hydroelectric Project (FERC No. 2288) located on the Androscoggin River in the town of Gorham, Coos County, New Hampshire.

Part of the LIHI application process requires the applicant to receive conformation from the state water resource agency that the continued operation of the project does not and will not contribute to the impaired waters of the state.

We ask that you please confirm, to your best abilities, that this is still true for the project and that the continued operations of the project do not contribute to water quality limitations.

If you have any questions, please contact me at (207) 416-1271 or by email at Kayla.Easler@KleinschmidtGroup.com.

Sincerely,

KLEINSCHMIDT ASSOCIATES

Kayla A. Easler

Kayla A. Easler
Regulatory Coordinator

KAE:TMJ
cc: Curt Mooney, Central Rivers Power
Andy Qua, Kleinschmidt

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From: Kayla Easler
To: "Carol.Henderson@wildlife.nh.gov"
Subject: Additional species review for LIHI certification
Date: Thursday, January 24, 2019 9:35:00 AM
Attachments: NHB18-3938_Easler (002).pdf
NHB19-0070_Easler (002).pdf
NHB19-0097_Easler.pdf
image001.png

Good morning Carol,

I have three projects Gorham, Canaan, and Hooksett (attached) that are going through the application process for LIHI certification.

Kim Tuttle directed me to you for the additional review of the projects. Please let me know what additional information you need for review. As part of the LIHI process they require written responses from the agencies, showing the continued operation of the project will not contribute to the status of the species and that no significant affect is expected.

Thank you,

Kayla A. Easler
Regulatory Coordinator
Kleinschmidt
Direct: (207) 416-1271
www.KleinschmidtGroup.com
*Providing **practical** solutions for **complex** problems affecting energy, water, and the environment*