UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

5440 Hydro, Inc. Project No. 13806-004 – NH

NOTICE OF AVAILABILITY OF ENVIRONMENTAL ASSESSMENT

(August 14, 2015)

In accordance with the National Environmental Policy Act of 1969 and the Federal Energy Regulatory Commission's regulations, 18 CFR Part 380 (Order No. 486, 52 FR 47879), the Office of Energy Projects has reviewed the application for exemption from licensing for the Brooklyn Dam Hydroelectric Project, to be located on the Upper Ammonoosuc River, in the town of Northumberland, Coos County, New Hampshire, and has prepared an Environmental Assessment (EA). In the EA, Commission staff analyzes the potential environmental effects of the project and concludes that issuing an exemption for the project, with appropriate environmental measures, would not constitute a major federal action significantly affecting the quality of the human environment.

A copy of the EA is on file with the Commission and is available for public inspection. The EA may also be viewed on the Commission's website at http://www.ferc.gov using the "eLibrary" link. Enter the docket number, excluding the last three digits in the docket number field, to access the document. For assistance, contact FERC Online Support at FERCOnlineSupport@ferc.gov or toll-free at 1-866-208-3676, or for TTY, (202) 502-8659. You may also register online at http://www.ferc.gov/docs-filing/esubscription.asp to be notified via email of new filings and issuances related to this or other pending projects. For assistance, contact FERC Online Support.

For further information, contact John Ramer at (202) 502-8969 or john.ramer@ferc.gov.

Kimberly D. Bose,
Secretary.

ENVIRONMENTAL ASSESSMENT FOR SMALL HYDROELECTRIC PROJECT EXEMPTION

Brooklyn Dam Hydroelectric Project

FERC Project No. 13806-004

New Hampshire

Federal Energy Regulatory Commission
Office of Energy Projects
Division of Hydropower Licensing
888 First Street, NE
Washington, D.C. 20426

August 2015

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EXECUTIVE SUMMARY

On July 28, 2014, 5440 Hydro, Inc. (5440 Hydro) filed an application for a small hydroelectric (10 megawatts or less) exemption from licensing to construct, operate, and maintain the proposed 600-kilowatt (kW) Brooklyn Dam Hydroelectric Project on the Upper Ammonoosuc River, in the town of Northumberland, in Coos County, New Hampshire. The project would not occupy any federal land.

Proposed Action

The Brooklyn Dam Project would consist of: (1) an existing 120-foot-long and 14-foot-high, timber crib dam and spillway[1] that has a crest elevation 878.73 feet National Geodetic Vertical Datum of 1929 (NGVD1929); (2) existing 2.50-foot-high flashboards with a crest elevation 881.23 feet NGVD1929; (3) an existing 43-foot-long floodgate structure with four 6.9-foot-wide, 10-foot-high floodgates; (4) an existing 26-acre impoundment having a gross storage capacity of 52-acre-feet at elevation 881.23 feet NGVD29; (5) an existing 100-foot-long, 45-foot-wide forebay with three 15.2-foot-wide, 15.5-foot-high trashracks with 1.0-inch open bar spacing; (6) an existing 9-foot-wide, 9-foot-high side waste gate; (7) an existing 45-foot-long, 48-foot-wide, and 23-foot-high brick and concrete powerhouse that would contain two new 300-kilowatt (kW), Kaplan turbine-generating units for a total installed capacity of 600 kW; (8) an existing 40-foot-long, 15.78-foot-high tailrace training wall; (9) an existing 48-foot-long, 45-foot-wide tailrace; (10) a new automatic controller and water-level sensor; (11) a new 100-foot-long, 480-volt underground transmission line connecting the powerhouse electrical panel to three new single-phase transformers; (12) a new 300-foot-long, 35.4-kilovolt above-ground transmission line connecting the transformers to the regional distribution grid at utility pole number 384/15; and (13) appurtenant facilities.

New construction proposed by 5440 Hydro would include installing two new turbine generating units and an automatic controller and water-level sensor, constructing the underground and above-ground sections of the transmission line, and installing the three single-phase transformers. The proposed project would annually generate approximately 2,800 megawatt-hours (MWh).

[1] The Brooklyn dam was constructed in 1912 and operated as a hydroelectric facility from 1930 to 1969. Some hydroelectric features (e.g. forebay structure, powerhouse, and tailrace) are still present; however, there are no turbines, generators, or transmission facilities present at this time.

The proposed project would bypass approximately 100 feet of the Upper Ammonoosuc River downstream of the Brooklyn dam.

To protect environmental resources, 5440 Hydro proposes to: (1) operate the project in a run-of-river mode; (2) modify the existing trashrack to cover the full depth of the intake opening and have a 1-inch clear bar spacing and an approach velocity of less than 2.0 feet-per-second; (3) undertake a bypass reach assessment to determine the linear extent of habitat dewatered by the project during periods of no spill; (4) conduct a post-operational water quality monitoring survey; (5) prepare a plan for maintaining and monitoring run-of-river operation at the project; and (6) during refilling of the project reservoir after flashboard replacement, dam maintenance, or emergency drawdown, operate the project such that 90 percent of inflow to the project is released below the project and the impoundment is refilled on the remaining 10 percent of inflow.

Public Involvement and Areas of Concern

Before filing its application for exemption from licensing, 5440 Hydro conducted a pre-filing meeting and site visit on May 8, 2012. 5440 Hydro invited federal, state, and local agencies and the general public to participate in the meeting and site visit.

On July 28, 2014, 5440 Hydro filed a final application for exemption from licensing.[2] On August 4, 2014, the Commission issued a public notice tendering the final application for exemption from licensing and soliciting additional study requests. No study requests were filed. On April 23, 2015, the Commission issued a public notice of its intent to waive scoping and stating that the application was ready for environmental analysis and requesting comments, terms and conditions, and recommendations.

The primary issue associated with the construction and operation of the Brooklyn Dam Hydroelectric Project is maintaining state water quality standards for dissolved oxygen in the Upper Ammonoosuc River downstream of Brooklyn Dam.

Alternatives Considered

[2] On January 15, 2014, 5440 Hydro distributed an initial consultation document in the form of a draft application for exemption from licensing and requested comments from stakeholders. The New Hampshire Division of Historical Resources, U.S. Fish and Wildlife Service, New Hampshire Department of Environmental Services, and New Hampshire Fish and Game Department on January 31, March 4, March 12, and April 4, 2014, respectively, provided comments on the draft exemption application. On May 14, 2014, Commission staff provided the applicant a list of potential deficiencies and additional information that should be corrected and included in any final application.

This Environmental Assessment (EA) analyzes the effects of project operation and recommends conditions for any exemption from licensing that may be issued. In addition to the applicant's proposal, we consider two alternatives: (1) the applicant's proposal including the section 30(c) conditions issued by the U.S. Department of the Interior (Interior) and additional measures recommended by staff (staff alternative); and (2) a no-action alternative – denial of the exemption application.

In addition to 5440 Hydro's proposed measures, the staff alternative would require 5440 Hydro to: (1) notify the Commission and New Hampshire State Historic Preservation Officer (New Hampshire SHPO) immediately if previously unidentified archaeological or historic properties are discovered during the course of construction, maintaining, or developing project works or other facilities; and (2) consult with the New Hampshire SHPO prior to implementing any maintenance activities, land-clearing, or land-disturbing activities, or changes to project operations or facilities that do not require Commission approval. Below we briefly discuss the anticipated environmental effects of issuing an exemption from license for the proposed project under the staff alternative.

Staff Alternative

Geology and Soils Resources – Construction of the project transmission line and transformers would result in little or no erosion along the length of the proposed transmission line.

Aquatic Resources – Operating the project in a run-of-river mode and implementing impoundment refill procedures would protect aquatic habitat in the impoundment and in the Upper Ammonoosuc River downstream of the proposed project. Implementing a flow-maintenance and monitoring plan would establish procedures for documenting compliance with run-of-river operation. Modifying the existing trashrack would protect fish from entrainment, impingement, and potential turbine injury and mortality. Conducting post-operation water quality monitoring and a bypassed reach flow assessment would ensure that any adverse project effects on water quality and aquatic habitat are identified.

Terrestrial Resources – Operating the project in the proposed run-of-river mode would maintain stable impoundment levels and minimize effects on wetland and riparian habitat. Re-using existing buildings for project facilities would minimize ground disturbing activities. Constructing the transmission line would disturb some vegetation, but these effects would be short-term and minor.

Threatened and Endangered Species –The federally listed threatened Canada lynx

(*Lynx canadensis*) and federally listed threatened Northern long-eared bat (*Myotis septentrionalis*) could occur in Coos county, NH; however, neither species has ever been documented in the immediate project vicinity, and no critical habitat for either species is known to occur in the project area.[3] Because these species are not known to inhabit the project area and the construction, operation, and maintenance of the proposed project would not substantially alter the existing environment, issuing an exemption order for the proposed project would have no effect on threatened or endangered species.

Cultural Resources – Constructing and operating the proposed project would not alter the historic character of the existing structures and would not disturb any known cultural resources. Redeveloping hydropower at the project site is consistent with the historic use of the Brooklyn dam.

Consulting with the New Hampshire State Historic Preservation Officer (SHPO) prior to implementing any maintenance activities, land-clearing or land-disturbing activities, or changes to project operation or facilities would ensure protection of cultural resources at the project. Consulting with the New Hampshire SHPO if previously unidentified cultural resources are discovered during the course of developing or maintaining project works or other facilities would ensure proper treatment of those resources.

No Action

Under the no-action alternative (denial of the application), the project would not be constructed, it would not generate an annual average of 2,800 MWh, and environmental resources in the project area would not be affected.

Conclusions

Based on our analysis, we recommend granting an exemption for this project as proposed by 5440 Hydro with the section 30(c) conditions provided by Interior and the two additional staff-recommended measures. We chose the staff alternative as the preferred alternative because: (1) the project would provide a dependable source of electrical energy for the region; (2) the 600 kW of electric capacity would come from a renewable resource that would not contribute to atmospheric pollution; and (3) the recommended environmental measures would adequately protect and enhance environmental resources affected by the project.

[3] http://ecos.fws.gov/ipac/

We conclude that granting an exemption from licensing for the project, with the staff-recommended environmental measures, would not be a major federal action significantly affecting the quality of the human environment.

ENVIRONMENTAL ASSESSMENT

Federal Energy Regulatory Commission
Office of Energy Projects
Division of Hydropower Licensing
Washington, D.C.

BROOKLYN DAM HYDROELECTRIC PROJECT
FERC No. 13806-004, New Hampshire

I. APPLICATION

On July 28, 2014, 5440 Hydro, Inc. (5440 Hydro) filed an application with the Federal Energy Regulatory Commission (Commission) for a small hydroelectric (10 megawatt [MW] or less) exemption from licensing for the proposed 600-kilowatt (kW) Brooklyn Dam Hydroelectric Project. The project would be located on the Upper Ammonoosuc River, in the town of Northumberland, Coos County, New Hampshire (figures 1 and 2). The project would not occupy any federal land.

II. PURPOSE OF ACTION AND NEED FOR POWER

A. Purpose of Action

The Commission must decide whether to grant 5440 Hydro an exemption from licensing for the project, and what, if any, conditions should be included in any exemption issued. Issuing an exemption from licensing would allow 5440 Hydro to generate electricity, making approximately 2,800 megawatt-hours (MWh) of electric power from a renewable resource available to the region. In this Environmental Assessment (EA), we assess the effects of constructing and operating the project as proposed by 5440 Hydro, alternatives to the proposed project, a no-action alternative, and recommend conditions to become a part of any exemption from licensing issued.

B. Need for Power

Under section 213 of the Public Utility Regulatory Policies Act (PURPA), the authority of the Commission to grant an exemption from licensing is not limited by a determination of the need for power. See Briggs Hydroelectric, 32 FERC ¶ 61,399 (1985). See also David Cereghino, 35 FERC ¶ 61,067 (1986).

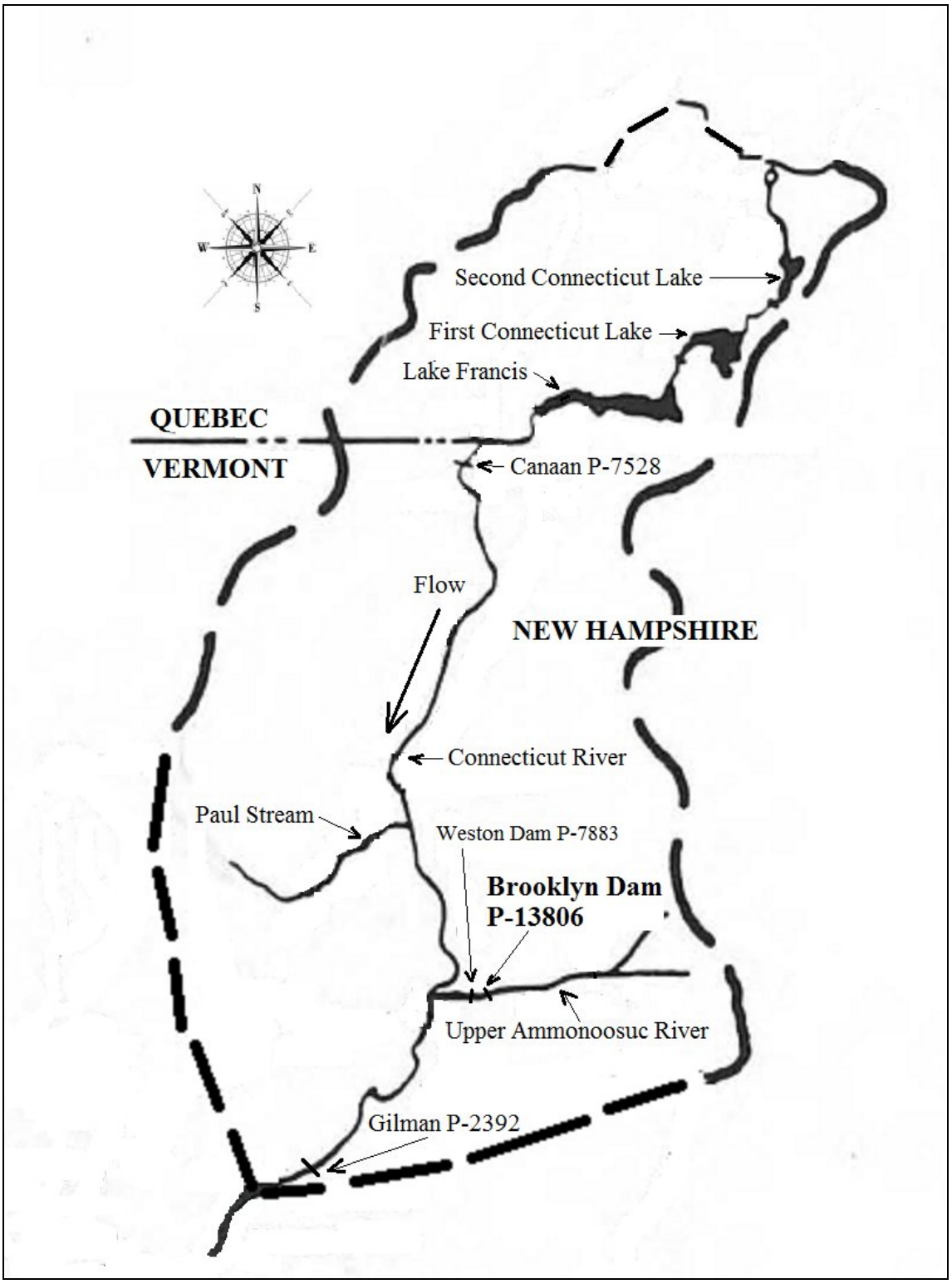

Figure 1. Location of the Brooklyn Dam Hydroelectric Project and other hydroelectric dams in the upper Connecticut River Basin (Source: staff).

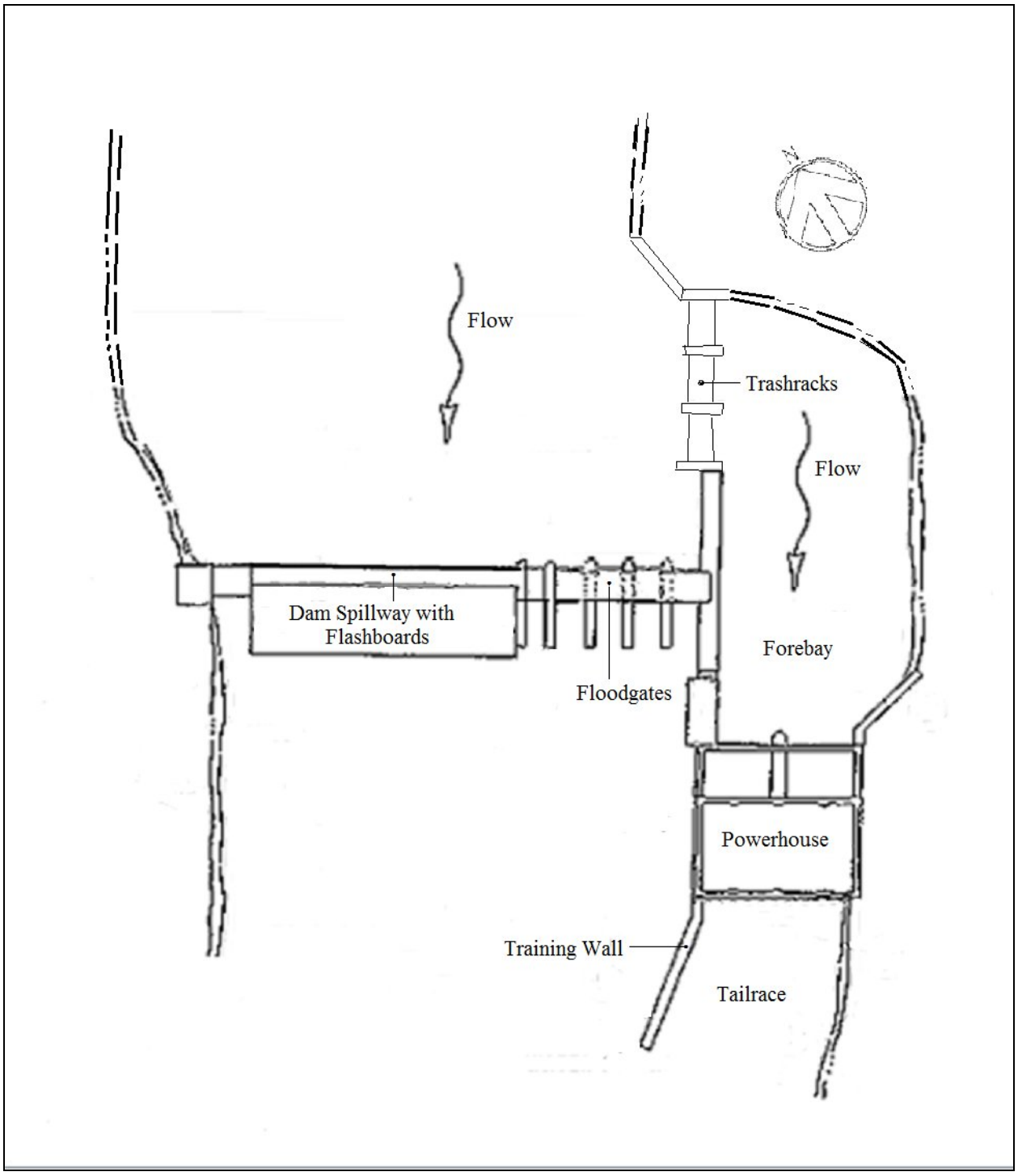

Figure 2. Brooklyn Dam Hydroelectric Project Site Plan (Source: staff).

III. PROPOSED ACTION AND ALTERNATIVES

A. Proposed Action

1. Project Description

The Brooklyn Dam Project would consist of: (1) an existing 120-foot-long and 14-foot-high, timber crib dam and spillway[4] that has a crest elevation 878.73 feet National Geodetic Vertical Datum of 1929 (NGVD1929) [5]; (2) existing 2.50-foot-high flashboards with a crest elevation 881.23 feet NGVD1929; (3) an existing 43-foot-long floodgate structure with four 6.9-foot-wide, 10-foot-high floodgates; (4) an existing 100-foot-long, 45-foot-wide forebay with three 15.2-foot-wide, 15.5-foot-high trashracks with 1.0-inch open bar spacing; (5) an existing 9-foot-wide, 9-foot-high side waste gate; (6) an existing 26-acre impoundment having a gross storage capacity of 52-acre-feet at elevation 881.23 feet NGVD1929; (7) an existing 45-foot-long, 48-foot-wide, and 23-foot-high brick and concrete powerhouse that would contain two new 300-kilowatt (kW), Kaplan turbine-generating units for a total installed capacity of 600 kW; (8) an existing 40-foot-long, 15.78-foot-high tailrace training wall; (9) an existing 48-foot-long, 45-foot-wide tailrace; (10) a new automatic controller and water-level sensor; (11) a new 100-foot-long, 480-volt underground transmission line connecting the powerhouse electrical panel to three new single-phase transformers; (12) a new 300-foot-long, 35.4-kilovolt above-ground transmission line connecting the transformers to the regional distribution grid at utility pole number 384/15; and (13) appurtenant facilities.

New construction proposed by 5440 Hydro would include installing two new turbine generating units, an automatic controller and water-level sensor, constructing the underground and above-ground sections of the transmission line, and installing the three single-phase transformers.

2. Project Operation

[4] The Brooklyn dam was constructed in 1912 and operated as a hydroelectric facility from 1930 to 1969. Some hydroelectric features (e.g. forebay structure, powerhouse, and tailrace) are still present; however, there are no turbines, generators, or transmission facilities present at this time.

[5] In a letter filed on April 23, 2015, New Hampshire Department of Environmental Services stated that 5440 Hydro removed a non-operating sluice gate located adjacent to the spillway that resulted in extending the spillway length from 113-feet-long to 120-feet-long.

5440 Hydro proposes to operate the project in a run-of-river mode, where outflow from the project would equal inflow, and water levels in the impoundment would not be drawn down for electric generation. 5440 Hydro proposes to remotely monitor the project on a daily basis and to operate the project by an automatic controller connected to the turbine wicket gates and dam flood gates and a water-level sensor located in the impoundment. When the sensor detects a decrease in the impoundment level, the turbine wicket gates would close to reduce flow to the turbine and maintain the impoundment at 881.23 feet NGVD29. When the sensor detects an increase in the impoundment level, the turbine wicket gates would open to increase flow to the turbine and maintain the impoundment at 881.23 feet NGVD29.

The two 300-kW turbines would each have a minimum hydraulic capacity of 33 cfs and a maximum hydraulic capacity of 315 cfs. At flows less than 33 cfs (the minimum operating capacity of the project), the project would not operate and all flow would be released over the flashboards. At flows between 33 cfs and 630 cfs (the minimum and maximum operating capacities of the project), the project would operate and no flow would be released over the flashboards. At flows greater than 630 cfs, the project would operate at its maximum hydraulic capacity and all remaining flow would pass over the flashboards. The proposed project would annually generate approximately 2,800 MWh.

The proposed project would bypass approximately 100 feet of the Upper Ammonoosuc River downstream of the Brooklyn dam.

3. Proposed Measures

In addition to operating the project in a run-of-river mode, 5440 Hydro proposes the following environmental measures.

- To operate the project in a run-of-river mode
- Develop and implement a plan for monitoring and maintaining run-of-river operation.
- Modify the existing trashrack to have 1-inch clear bar spacing, approach velocity of less than 2.0 feet per second (fps), and extend full depth.
- Undertake a bypass reach assessment to determine the linear extent of habitat dewatered by the project during periods of no spill.

- Conduct a post-operational water quality monitoring survey.

- Operate the project such that 90 percent of inflow to the project is released below the project and the impoundment is refilled on the remaining 10 percent of inflow after flashboard replacement, dam maintenance, or emergency drawdown.

B. Section 30(c) Conditions

Pursuant to section 30(c) of the FPA, 16 U.S.C. § 823a(c), federal and state fish and wildlife agencies have mandatory conditioning authority on exempted projects. The U.S. Department of the Interior (Interior) filed such conditions on May 20, 2015, (see Appendix A). The conditions are summarized below.

- Operate the project in an instantaneous run-of-river mode with inflow equal to outflow.

- Install trashracks with an approach velocity of 2.0 fps or less, 1-inch or less clear bar spacing, and that extend to the full depth of the intake opening.

- Conduct a bypassed reach assessment to determine the linear extent of habitat dewatered during periods of no spill.

- Conduct water quality monitoring for a minimum of 3 years after the start of project operation.

- Develop a plan for monitoring and maintaining run-of-river operation.

- During impoundment refilling, pass 90 percent of inflow downstream and refill the headpond with the remaining 10 percent of inflow.

- Construct, operate, maintain, and evaluate upstream and downstream fish passage facilities when notified by the agencies that such facilities are necessary.

- Notify the agencies when the project commences operation and provide a set of as-built drawings.

- Allow the agencies to inspect the project area at any time while the project operates to monitor compliance with agency terms and conditions.

- A reservation to revise and add terms and conditions of the exemption to carry out agency responsibilities with respect to fish and wildlife resources.

- Include the 30(c) conditions in any conveyance (by lease, sale, or otherwise) of the exemptee's interests.

D. Additional Staff-Recommended Measures

In addition to 5440 Hydro Inc.'s proposed measures and the 30(c) conditions filed by Interior the staff alternative would require 5440 Hydro to consult with the New Hampshire Division of Historical Resources (New Hampshire SHPO): (1) prior to implementing any project modifications, including maintenance activities, land-clearing or land-disturbing activities, or changes to project operation or facilities, that do not require Commission approval but could affect cultural resources; and (2) if previously unidentified cultural resources are discovered during the course of constructing, maintaining, or developing project works or other facilities.

E. No-Action Alternative

Under the no-action alternative (denial of the application), the project would not be constructed and it would not annually generate an estimated average of 2,800 MWh and environmental resources in the project area would not be affected.

IV. CONSULTATION AND COMPLIANCE

A. Agency Consultation

The Commission's regulations require that applicants consult with appropriate state and federal agencies, tribes, and the public before filing an exemption application. This consultation is required to comply with the Endangered Species Act, the National Historic Preservation Act, and other federal statutes. Pre-filing consultation must be completed and documented in accordance with Commission regulations.

B. Public Outreach and Scoping

As part of their pre-filing consultation, 5440 Hydro distributed a pre-application document (PAD) on January 17, 2012,[6] and conducted a joint agency/public meeting and

[6] At the time it initiated pre-filing consultation, 5440 Hydro anticipated applying for a license and therefore distributed a PAD, rather than an initial consultation document

site visit on May 8, 2012. A draft application for an exemption from licensing was distributed on January 15, 2014, and Commission staff provided the applicant with a list of potential deficiencies and additional information on May 14, 2014. On July 28, 2014, 5440 Hydro addressed these comments in the final application filed on July 28, 2014, and additional information filed on November 27 and 28, 2014.

Before preparing this EA, the Commission solicited additional study requests by public notice on August 4, 2014. No comments or study requests were filed. On April 23, 2015, the Commission issued a public notice of its intent to waive scoping. No comments were filed on the notice of intent to waive scoping.

C. Interventions

On April 23, 2015, the Commission issued a public notice accepting the application and soliciting motions to intervene.[7] No motions to intervene or notices of intervention were filed.

D. Comments and Recommendations

On April 23, 2015, the Commission issued a public notice stating the application was ready for environmental analysis and requesting final comments, recommendations, and terms and conditions.[8] Interior filed comments on May 21, 2015, and the New Hampshire Department of Environmental Services filed comments on May 14, 2015. No other comments were received and 5440 Hydro did not file reply comments.

E. Compliance

1. Endangered Species Act

Section 7 of the Endangered Species Act requires federal agencies to ensure that their actions are not likely to jeopardize the continued existence of endangered or threatened species or result in the destruction or adverse modification of the critical habitat of such species. Although two federally listed species, the Canada lynx

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(ICD) which is required by section 4.38(b)(2) of the Commission's regulations for an exemption from licensing. For the purpose of this proceeding, 5440 Hydro's PAD serves as the ICD.

[7] The notice established May 25, 2015, as the deadline to file motions to intervene and protests.

[8] The notice established May 25, 2015, as the deadline to file comments, recommendations, and terms and conditions.

(threatened) and the Northern long-eared bat (threatened), may occur in Coos County, NH[9], neither of these species has been documented in the immediate project area and there is no known habitat for these species in the project area. Therefore, staff concludes that issuing an exemption from licensing for the Brooklyn Dam Hydroelectric Project would have no effect on threatened or endangered species or critical habitat and no further action under the Endangered Species Act is required.

2. Section 106 of the National Historic Preservation Act

Section 106 of the National Historic Preservation Act (NHPA)[10] requires that every federal agency take into account how each of its undertakings could affect historic properties. Historic properties are districts, sites, buildings, structures, traditional cultural properties, and objects significant in American history, architecture, engineering, and culture that are eligible for inclusion in the National Register of Historic Places (National Register).

By letter dated January 31, 2014, the New Hampshire SHPO determined that there is no potential to cause effects on historic properties within the proposed project's area of potential effects (APE). [11] We have determined that there are no historic properties within the project's APE and that the project would not affect historic properties. Therefore, the Commission's regulatory requirements pertaining to section 106 of the NHPA have been satisfied.

V. ENVIRONMENTAL ANALYSIS

In this section, the general environmental setting in the project area and cumulative effects are described. An analysis of the environmental effects of the proposed action and action alternatives is also included. Sections are organized by resource area (aquatic resources, cultural resources, etc.). Under each resource area, historic and current conditions are first described. The existing condition is the baseline against which the environmental effects of the proposed action and alternatives are compared, including an assessment of the effects of proposed mitigation, protection, and enhancement measures. Staff conclusions and recommended measures are discussed in section VI of the EA.

[9] http://ecos.fws.gov/ipac/

[10] 54 U.S.C. § 306108 (2014).

[11] A copy of the New Hampshire SHPO letter was filed on February 10, 2014.

Unless noted otherwise, the sources of our information are 5440 Hydro's exemption application (5440 Hydro, Inc, 2014) and additional information filed by 5540 Hydro (5440 Hydro, Inc., 2014a; 2014b; and 2015c).

A. General Description of the Area

The project would be located on the Upper Ammonoosuc River in the town of Northumberland, New Hampshire, at the site of the existing Brooklyn dam in the community of Groveton. Brooklyn dam was constructed in 1912, and in 1930 hydroelectric generation facilities were installed and operated to provide power to the Groveton Paper Mill. These facilities were operated until the generating equipment was destroyed during a flood in 1969. The existing buildings and facilities at the dam are currently unused and unoccupied.

The 43-mile long Upper Ammonoosuc River is a tributary of the Connecticut River located in the northeastern part of New Hampshire. The headwaters are in the White Mountains on the slopes of Mt. Cabot. Major tributaries of the Upper Ammonoosuc River include Nash Stream and Potter Brook. Brooklyn Dam is located in the lower portion of the Upper Ammoonosuc River, approximately 3.2 miles upstream of its confluence with the Connecticut River. Land use in the watershed is primarily rural with the majority of developed land consisting of residential and agricultural areas with some limited commercial and industrial areas.

Weston Dam (FERC Project No. 7883) is a Commission licensed hydroelectric project located on the Upper Ammonoosuc River approximately 0.7 miles downstream of the proposed project (see figure 1). The Brooklyn Project (FERC Project No. 8045) was a Commission licensed project which included two developments: the Brooklyn Development located at Brooklyn dam and the Red Development located at Red dam which is located about 0.8 mile upstream of the proposed Brooklyn Dam Project.[12]

[12] See order accepting surrendering of license issued on March 11, 1991. 54 ¶ 62,153 (1991).

B. Cumulative Effects Analysis

According to the Council on Environmental Quality's regulations for implementing NEPA (40 CFR, section 1508.7), an action may cause cumulative impacts on the environment if its impacts overlap in time and/or space with the impacts of other past, present, and reasonably foreseeable future actions, regardless of what agency or person undertakes such actions. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time, including hydropower and other land and water development activities.

Based on our review of 5440 Hydro's application for an exemption from licensing and agency comments, staff has not identified any resources as potentially being cumulatively affected by constructing and operating the project.

C. Proposed Action and Action Alternatives

Only resources that would be affected, or about which comments have been received, are addressed in detail in this EA and discussed in this section. Commission staff has not identified any substantive recreation, aesthetic, or socioeconomic issues associated with the proposed action; therefore, we do not assess effects on these resources in this EA.

1. Geology and Soils

Affected Environment

The area surrounding the proposed project consists primarily of glacial till and outwash deposits (NHDES, 2007). Surficial soils along east bank of the Upper Ammonoosuc River, where project transmission lines and transformers are proposed to be located,[13] include moderately well drained, cobbly, very fine sandy loams having a moderate susceptibility to erosion. Topography surrounding the project area is generally level and Brooklyn Street lies immediately east of the project area (NRCS, 2013).

Environmental Effects

5440 Hydro proposes to construct a new 100-foot-long, 480-volt underground transmission line connecting the powerhouse electrical panel to three new single-phase transformers and a new 300-foot-long, 35.4-kilovolt above-ground transmission line

[13] See proposed transmission line and transformer locations on Exhibit F sheet 1 of 6 filed on November 28, 2014.

connecting the transformers to the regional grid at the Public Service of New Hampshire's utility pole number 384/15.

5440 Hydro does not propose any best management practices to control soil erosion and sedimentation during construction of the proposed project transmission lines.

Staff Analysis

Construction of the 400-foot-long project transmission line would disturb a minimal amount of soil because only 100 feet of the line would be buried and the new transformers and remaining 300 feet of transmission line would be installed above ground on utility poles with minimal disturbance to the soil surface. Installation of the project transmission line and transformers would result in little or no erosion along the length of the proposed transmission line.

2. Aquatic Resources

Affected Environment

The impoundment created by the Brooklyn dam has a surface area of about 26 acres at an elevation of 881.23 NGVD29. The Upper Ammonoosuc River exhibits higher flows during the spring (March through May) and lower flows during the summer (July through September).[14] Minimum discharge during the period of record (i.e., since 1941) was 32 cfs and the maximum discharge was 9,950 cfs. The mean 7-day low flow with a recurrence interval of 10 years (7Q10) is about 47 cfs. Low flow of 100 cfs was exceeded 90% of the time at the gage; high flow of 1,100 cfs was exceeded 10% of the time at the gage; and the average daily flow at the gage was 474 cfs. Flows in Upper Ammonoosuc River at the project location meet or exceed the maximum operating capacity of the project (630 cfs) approximately 20 percent of the time (see Appendix E, application flow duration curve) and meet or exceed the minimum operating capacity of the project (33 cfs) 95% of the time.

Water Quality

The Upper Ammonoosuc River is designated as Class B under New Hampshire

[14] Flow data was obtained from United States Geological Survey gage no. 01130000 which is located on the Upper Ammonoosuc River approximately 3.8 miles upstream of the proposed project. Flows estimates for the project site were derived by multiplying flows at the gage site by the ratio (i.e., 1.047) of the drainage areas at the project site (i.e., 243 square miles) and at the gage (i.e., 232 square miles).

DES surface water quality standards. Class B waters are suitable for recreation purposes, including water contact recreation, for water supply, and for fish habitat. Class B waters have a minimum dissolved oxygen (DO) standard of 6 milligrams per liter (mg/L) or 75 percent (%) saturation (NHDES, 2013). New Hampshire DES does not specify a numeric criterion for water temperature; however, it does indicate that the temperature of water diverted for generation should not appreciably interfere with the designated use of Class B waters (NHDES, 2013).[15]

Based on a water quality monitoring at the project site, completed in the summer of 2013 (Gomez and Sullivan, 2013), water quality standards in the project area are currently being met for dissolved oxygen (DO). During a two day water quality sampling on August 19 and August 29, 2013, DO readings upstream of the dam, at depths from 0 to 8 feet at temperatures from 17.9 degrees (°) centigrade (C) to 20.5° C, ranged from 8.16 to 8.82 mg/l and from 93.5 to 89.8 % saturation. DO readings downstream of the dam, at depths from 0 to 6 feet at temperatures from 18.3° C to 20.7° C, ranged from 8.54 to 9.17 mg/l and from 95.3 to 97.9 % saturation.

Continuous DO measurements for ten consecutive days from August 19 through August 29, 2013, were also similar upstream and downstream of the dam. The mean DO concentration during this period was 8.72 mg/l at the upstream location and 8.75 mg/l at the downstream location; the minimum concentrations were 7.94 mg/l and 7.12 mg/l respectively for the upstream and downstream locations. The mean DO saturation during sampling was approximately 90.7% and 82.8% respectively for the upstream and downstream locations.

Fishery Resources

The Upper Ammonoosuc River provides habitat primarily for a warmwater fishery, including brown bullhead, common sucker, yellow perch, common shiner, chain pickerel, and blacknose dace, as well as, brook, brown, and rainbow trout. Recently (2011-2013), the New Hampshire Fish and Game Department stocked the river in the project area with about 800 brook trout and 1,500 brown trout to support a put-and-take fishery.

There are no diadromous fish[16] species in the vicinity of the proposed project and no immediate plans to restore diadromous fish to portions of Upper Ammonoosuc River.

[15] Designated uses of Upper Ammonoosuc River at the proposed project site include recreation, drinking water, fish consumption, and aquatic life.

[16] Fish that migrate between fresh and saltwater.

Environmental Impacts and Recommendations

Mode of Operation

5440 Hydro proposes to operate the project in a run-of-river mode, with inflow equal to outflow, resulting in a stable impoundment level. The project would generate electricity using flows from 33cfs (the minimum operating capacity of the project) to 630 cfs (the maximum operating capacity of the project). When the project is not operating, all flows would be passed over the spillway.

Interior 30(c) condition 1 would require 5440 Hydro to operate the project in an instantaneous run-of-river mode to maintain existing aquatic habitat and water quality downstream of the project.

Staff Analysis

Operating the proposed hydroelectric project in a run-of-river mode would result in no change in the amount, schedule, or duration of flow released to Upper Ammonoosuc River downstream of the project. Run-of-river mode would also minimize the length of time water is retained in the impoundment and help avoid increasing water temperatures in the upper levels of the impoundment from solar heating. This measure would also limit fluctuating water levels which influence the reproductive success of fishes that spawn in near-shore areas (Sammons and Bettoli, 2000). By operating the project in a run-of-river mode, habitat in the project impoundment and habitat in the Upper Ammonoosuc River downstream of the project would essentially be unchanged compared to current conditions, and aquatic organisms, including fish and benthic macroinvertebrates, would be unaffected.

Bypassed Reach Habitat Assessment

Interior 30(c) condition 2 would require 5440 Hydro, in consultation with the U.S. Fish and Wildlife Service, to determine the linear extent of habitat dewatered during periods of no spill.

Staff Analysis

When operating, the proposed project would divert flow to the proposed powerhouse and bypass approximately 100 linear feet of the Upper Ammonoosuc River between Brooklyn dam and the proposed project's tailrace. When inflows at the dam are diverted to the proposed project's forebay and powerhouse, and no flows are spilled over the dam's spillway or released through the dam's floodgates, then the bypassed reach

downstream of the dam could become dewatered. The backwater created by Weston dam 0.7 miles downstream of Brooklyn dam may reach the toe of Brooklyn dam, and consequently, may keep the bypassed reach wetted during periods of no spill at Brooklyn dam. However, because the water level in the Weston impoundment is at elevation 866.77 ft. NGVD and the toe of Brooklyn dam is at elevation 870.08 ft. NGVD, it is possible that some aquatic habitat downstream of Brooklyn dam would be dewatered during periods of project operation. Specifically, a section of the bypassed reach between elevation 870.17 feet and 866.9 feet (a difference of 3.27 feet) may be dewatered when no water is spilled over the dam's flashboards or released through the dam's floodgates.

An assessment of the bypassed reach during periods of no spill would provide empirical data to evaluate the effects of project operations on bypassed reach habitat and determine the need for additional bypass flows.

Trashrack Design

The applicant proposes to install new trashracks at the entrance to the proposed project forebay that would be oriented parallel to the river flow, extend full depth of the intake opening, have clear bar spacing of 1 inch, and have an approach velocity less than 2.0 feet-per–second (the licensee estimates an approach velocity of 1.1 fps).

Interior 30(c) condition 3 would require the installation of a trashrack that: (1) has an approach velocity less than or equal to 2.0 fps (as measured 6 inches in front of the racks); (2) has clear spacing of 1.0 inch or less; and (3) extends to cover the full depth of the intake opening. Interior also specifies that 5440 Hydro would need to keep the trashrack free of debris.

Staff Analysis

Fish residing in the project impoundment could be entrained at the proposed project's intake and, consequently, injured or killed when passing through the proposed project's turbine during operation. Fish could also be impinged on the project's trashrack during project start-up and operation, resulting in injury or death.

The applicant's proposed trashrack would meet the U.S. Fish and Wildlife Services's trashrack design criteria and would likely prevent most adult and juvenile fish found in the project vicinity from passing through the proposed trashracks, entering the proposed project's forebay, passing through the proposed project's turbines and being injured or killed.

Ensuring that the trashrack is free of trash and other debris would also help to limit fish entrainment and impingement at the intake structure. If debris accumulates on the trashrack, fish could be entangled in the debris or the approach velocity at the trashrack could increase as intake water is constricted to a smaller area. Monitoring and removal of debris would maintain the effectiveness of the trashrack and limit the occurrence of short-term increases in fish entrainment or impingement.

Water Quality Monitoring

Interior 30(c) condition 4 would require 5440 Hydro to conduct water quality monitoring for a minimum of 3 years after the first low-flow season after the project commences operation. If water quality monitoring indicates a violation of water quality standards, 5440 Hydro may be directed by Interior to implement mitigation measures.

Staff Analysis

During project operation, much of the flow passing downstream from the project impoundment would be diverted into the project intake and released into the discharge channel; therefore, flow spilling over the Brooklyn dam would be reduced by project operation. Reducing the flow that spills over the dam by diverting flow through the project works could result in less aeration of the Upper Ammonoosuc River downstream of the dam and result in lower DO concentrations. Reduced DO would likely be most significant during the warmer months (July through September) when water temperatures are higher and the assimilative capacity of water is lower. In the project area, Upper Ammonoosuc River is designated as Class B water, and Class B waters have a minimum DO standard of 6 mg/L or 75 % saturation (NHDES, 2013). Reduced spill could cause the DO concentration to fall below this standard and affect the quality of the aquatic habitat for fish and other aquatic organisms in Upper Ammonoosuc River.

5440 Hydro proposes to operate the project in a run-of-river mode, which would minimize the length of time water is retained in the impoundment and prevent project-related increases in water temperatures from solar heating. No change in water temperature would be expected from diverting water through the powerhouse and releasing it into the discharge channel. However, diverting flow to the proposed project's intake and spilling less flow over the dam could lower the DO in the river immediately downstream of the dam and in the bypassed reach.

Conducting post-operation water quality monitoring could determine if the project is affecting water quality, in particular DO, in the river downstream of the dam. If monitoring identified significant adverse changes to water quality, then other measures could be developed and implemented, such as reducing flows to the powerhouse and

increasing flows over the dam. Monitoring and the consideration of additional measures in consultation with Interior would ensure that any significant adverse project effects on water quality would be addressed.

Operation, Maintenance, and Monitoring Plan

Interior 30(c) condition 5 would require that 5440 Hydro develop and implement a plan for maintaining and monitoring run-of-river operation at the proposed project site.

Staff Analysis

An operation, maintenance, and monitoring plan would help the agencies and Commission staff verify that appropriate methods and equipment would be used to ensure that the project is operating in a run-of-river mode.

Upstream and Downstream Fish Passage

Interior 30(c) condition 6 would require 5440 Hydro to construct, operate, and maintain upstream and downstream fish passage facilities when notified by the agencies that such fishways are needed.

Staff Analysis

Presently, there are no migratory fish that are able to access the project area. Weston dam is located about 0.7 miles downstream of Brooklyn dam on the Upper Ammonoosuc River, and there are a number of dams downstream of the proposed project site on the Connecticut River that do not have fish passage facilities. Therefore, migratory fish from the mainstem of the Connecticut River cannot currently move upstream into the proposed project area. However, if migratory fish gain access to the project site in the future, then upstream and downstream movements of migratory fish could be impeded by the Brooklyn dam because no dedicated fish passage facilities exist at this dam. During project operation, fish moving downstream would potentially be attracted to the location of flows over the spillway and the flows entering the project intake. Because of the trashrack described above, most fish would be excluded from the project intake and would need another route to pass downstream. Spillway flows may be adequate at times, but providing a dedicated downstream passage route could be more effective because it may attract fish away from the intake area and potentially reduce entrainment of fish. Therefore, providing downstream passage facilities in the future would potentially increase the survival rate of out-migrating fish.

Likewise, providing upstream passage facilities in the future would allow

diadromous fish species, such as American shad, river herring, and American eel, to move upstream past the dam and project facilities. The amount of spawning and rearing habitat upstream of the Brooklyn dam is unknown, but access to additional habitat could enhance the production of migratory species.

Drawdown Management

Periodically, the project impoundment would have to be drawn down for maintenance and for any unscheduled emergencies. Interior 30(c) condition 7 would require the implementation of an impoundment refill procedure whereby 90 percent of project inflow is passed downstream, and the remaining 10 percent is used to refill the impoundment.

Staff Analysis

Releasing 90 percent of the project impoundment's inflow during impoundment refilling would ensure that downstream flows are kept at near natural flow levels and the impoundment is refilled in a timely manner. Minimizing the length of time that the impoundment is drawn down and that flows are reduced downstream would help maintain the existing aquatic habitat for fish and other aquatic species. Further, the impoundment refill procedures would ensure that aquatic habitat downstream would quickly be returned to normal conditions with minimal impacts to aquatic resources.

3. Terrestrial Resources

Affected Environment

The Brooklyn Dam Project is located in the Northern Connecticut Valley section of the Northern Highlands ecoregion (Griffith et al., 2009), which has low hills, broad valleys, and floodplains. This region is dominated by the Connecticut River and its tributaries, and has a lower elevation and slightly milder climate than its surroundings. The forests that cover this region are boreal softwood forests with some occurrences of more southern species.

The project is located in an old industrial complex in a small town, and the land immediately within the project vicinity has old buildings, vacant lots, and some residential areas. In the previously disturbed area in the immediate vicinity of the project, speckled alder (*Alnus incana*), willow (*Salix* spp.), and other shrubs predominate. The town is mostly surrounded by relatively undeveloped forest containing sugar maple (*Acer saccharum*), American beech (*Fagus grandifolia*), yellow birch (*Betula lutea*), balsam poplar (*Populus balsamifera*), and eastern white pine (*Pinus strobus*).

Wetlands

According to the National Wetlands Inventory (USFWS, 2015), two wetlands exist in or near the project boundary. A half-acre freshwater forested/shrub wetland is located within the project boundary near the railroad bridge on the north side of the Upper Ammonoosuc River. Another small half-acre freshwater emergent wetland is located just downstream of the project on the south shore of the Upper Ammonoosuc River.

Wildlife Resources

The Brooklyn Dam Project is located in an old industrial area within a small town that is surrounded by relatively undisturbed forest. Amphibians in the project vicinity include Amercian toads (*Bufo americanus*), and several frog species. Reptiles include the Northern redbelly snake (*Storeria occipitomaculata*), common garter snake (*Thamnophis sirtalis*), and Northern ringneck snake (*Diadophis punctatus*). Common birds found nearby include: woodpeckers (*Picoides* spp.), blue jay (*Cyanocitta cristata*), common raven (*Corvus corax*), vireos (*Vireo* spp.), warblers (*Dendroica* spp.). The Connecticut Basin forms part of the Northern Flyway for waterfowl and many waterfowl fly through the area, but few stay to nest in the project vicinity. Mammals commonly found near the project include various shrew and bat species, Eastern chipmunk (*Tamias striatus*), raccoon (*Procyon lotor*), ermine (*Mustela ermine*), porcupine (*Erethizon dorstatum*), black bear (*Ursus americanus*), whitetail deer (*Odocoileus virginianus*), and moose (*Alces alces*). Beaver (Castor canadensis), mink (Neovison vison), muskrat (*Ondatra zibethicus*), and river otter (*Lontra Canadensis*) live in the river around the project.

Environmental Effects

5440 proposes to continue to operate the project in a run-of-river mode. Proposed construction would include repowering the existing unused powerhouse and construction of a 400-foot-long transmission line that would include a 100-foot-long buried section.

Staff Analysis

Operating the project in the proposed run-of-river mode would maintain stable impoundment levels and minimize effects on wetland and riparian habitat. Re-using existing buildings would minimize ground disturbing activities. Constructing the transmission line would disturb some vegetation, but these effects would be short-term and minor.

4. Threatened and Endangered Species

Affected Environment

The United States Fish and Wildlife Service (USFWS) website indicates that Canada lynx (threatened) and Northern long-eared bat (threatened) could potentially be found in Coos County, NH.[17] There is no critical habitat designated for either these species within the vicinity of the proposed project.

Environmental Effects

Canada Lynx

5540 does not propose any measures that would affect Canada lynx (*Lynx canadensis*). No comments regarding this species were received.

Staff Analysis

Canada lynx live in colder regions because they require abundant snowshoe hares (*Lepus americanus*) as their primary prey. Lynx also require deep snow to give them a mobility advantage over other predators, and log piles or dense vegetation for dens. Lynx in the contiguous United States are not abundant because their habitat is naturally limited, and they are considered a distinct threatened population from lynx that inhabit Canada and Alaska (USFWS, 2013). Canada lynx may live in the highland forests surrounding the project, but they do not occur in the immediate project vicinity. The project would not affect lynx habitat or prey, and it is not likely to disturb lynx. We conclude that issuing an exemption from licensing for the Brooklyn Dam Project would have no effect on the Canada lynx.

Northern Long-Eared Bats

5540 does not propose any measures that would affect the Northern long-eared bat (*Myotis septentrionalis*). No comments regarding these species were received.

Staff Analysis

Northern long-eared bats hibernate colonially in caves, mines, and other underground areas through the winter. Summer habitat requirements include: (1) dead or live trees and snags with peeling or exfoliating bark, split tree trunks or branches, or

[17] http://ecos.fws.gov/ipac/

cavities that may be used as maternity roost areas; (2) live trees such as shagbark hickory and oaks which have exfoliating bark; and (3) barns or sheds (USFWS, 2015b; 2015d). These bats are susceptible to the fungal white-nose syndrome (USFWS, 2015c), disturbance during hibernation by human activity in or near the entrances of their caves, and loss or fragmentation of summer forest habitat, and by pesticide usage that reduces the number of flying insects or accumulation of toxins in the bats (USFWS, 2015c; USFWS, 2015d).

Northern long-eared bats are not suspected of hibernating near the project. They may be present in the project vicinity in the summer, but if these bats were present, it is doubtful that the operation of the project would negatively affect them because project operations would not have any expected effect on their habitat or food availability. We conclude that issuing an exemption from licensing for the Brooklyn Dam Project would have no effect on Northern long-eared bats.

5. Cultural Resources

Affected Environment

Area of Potential Effect

The Advisory Council on Historic Preservation defines an area of potential effect (APE) as the geographic area or areas in which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist. The APE for the Brooklyn Dam Project includes: (a) lands enclosed by the project boundary and (b) lands or properties outside the project boundary in which project operations or project-related actions may cause changes in the character or use of historic properties, if any exist.

Historical Background

Coos County is the northernmost county in New Hampshire, and the only county in New Hampshire to border Canada. The word Coos comes from the Algonquin tribe and is a term for “small pines”. The Upper Ammonoosuc River is named after the Abenaki Indian word for “fish place” (i.e., Ammonoosuc). The Abenaki Indians regularly used the Upper Ammonoosuc River to transport trade and for seasonal hunting and gathering movements.

North of the mountain ridge known as Cape Horn, near the Connecticut River, are the remains of Fort Wentworth, which was built by the New Hampshire Militia in 1755 during the French and Indian War. The remains of Fort Wentworth are just downstream from present day Groveton.

Groveton was first settled in 1767, named as Northumberland in 1771, and incorporated November 16, 1779.[18]

Historic Properties

By the late 19th century, paper production began in the project vicinity, and the Brooklyn Dam was constructed in 1912 to provide water power for the Groveton Paper Mill. This paper mill began as Diamond International, then switched ownership to James River Paper Company, ultimately switching ownership to Wausau Paper Mill until 2008 when it closed (Water Finder, 2015).[19] A flood in the 1960's destroyed Groveton Paper Mill's electric generating equipment that had been operating since about 1930. The powerhouse was then gutted and has since remained abandoned.

The Brooklyn Dam is located immediately upstream from the Groveton historic covered bridge, which was constructed over the Upper Ammonoosuc in 1852. The Groveton Bridge is eligible for listing on the National Register of Historic Places.[20]

Environmental Effects and Recommendations

5440 is proposing to operate the Brooklyn Dam Project as run-of-river and to use existing facilities without major modifications.

Staff Analysis

The operation of the project would not alter the historic character of the existing structures or the existing normal water surface elevation. In a letter dated January 31, 2014, the New Hampshire SHPO stated that there are no historic resources within the proposed project area. Commission staff have reviewed the applicant's proposal and the additional measures recommended by Interior, and we find that no historic,

[18] http://en.wikipedia.org/wiki/Northumberland,_New_Hampshire
[19] http://www.waterdepartment.net/tap-water-Groveton-NH.html
[20] http://www.nh.gov/nhdhr/bridges/p61.html

archaeological, or traditional cultural properties would be affected by operation of the proposed project.

During the term of any exemption, 5440 would occasionally need to implement project modifications that would not require Commission approval but could affect cultural resources at the project. These modifications could include activities such as replacement of broken windows, roof or siding repairs, or general landscaping. Including a condition in any exemption that would require 5440 to consult with the New Hampshire SHPO prior to conducting any maintenance activities, land-clearing or land-disturbing activities, or changes to project operation or facilities would ensure that cultural resources are not adversely affected.

While the project would have no adverse effects on known historic properties, it is possible that unknown cultural resources could be discovered during the course of constructing or operating the project. Including a condition in any exemption that would require 5440 to consult with the New Hampshire SHPO if previously unidentified cultural resources are encountered would ensure the proper treatment of these resources. In the event of any such discovery, 5440 would discontinue all exploratory or construction-related activities until the proper treatment of any potential cultural resources is established.

D. No-Action Alternative

Under the no-action alternative, the project would not be issued an exemption, the project would not generate electricity, and there would be no effects on environmental resources.

VI. RECOMMENDED ALTERNATIVE

Based on our independent review and evaluation of the environmental effects of the proposed action, section 30(c) conditions filed by Interior, and a no-action alternative, we recommend the proposed action, including all of 5440 Hydro's proposed measures, the 30(c) conditions, and additional staff-recommended measures as the preferred alternative. Additional measures recommended by staff include consulting with the New Hampshire SHPO: (1) prior to implementing any project modifications, including maintenance activities, land-clearing or land-disturbing activities, or changes to project operation or facilities, that do not require Commission approval but could affect cultural resources; and (2) if previously unidentified cultural resources are discovered during the course of constructing, maintaining, or developing project works or other facilities.

We recommend this alternative because: (1) issuing an exemption from licensing would allow 5440 Hydro to construct and operate the project as a beneficial and dependable source of electric energy; (2) the 600 kW of electric capacity would come from a renewable resource that would not contribute to atmospheric pollution; and (3) the recommended environmental measures would protect water quality, aquatic resources, terrestrial resources, and any previously unidentified cultural resources.

We recommend the following environmental measures proposed by 5440 Hydro for any exemption that would be issued for the proposed project:

- Operate the project in a run-of-river mode.

- Develop and implement a plan for monitoring and maintaining run-of-river operation.

- Install trashracks with an approach velocity of 2.0 fps or less, 1-inch or less clear bar spacing, and that extend to the full depth of the intake opening.

In addition, we recommend the following 30(c) conditions specified by Interior:

- Conduct a bypassed reach assessment to determine the linear extent of habitat dewatered during periods of no spill.

- Conduct water quality monitoring for a minimum of 3 years after the start of project operation.

- During impoundment refilling, pass 90 percent of inflow downstream and refill the impoundment with the remaining 10 percent of inflow.

We also recommend the following additional measures for the protection of cultural resources. We discuss our basis for additional recommended measures below.

Cultural Resources

During the term of any license, 5440 Hydro would occasionally need to implement project modifications that would not require Commission approval but could affect cultural resources at the project. These modifications could include activities such as replacement of broken windows, roof or siding repairs, or general landscaping. To ensure that cultural resources are not adversely affected from project modifications, we recommend that 5440 Hydro consult with the New Hampshire SHPO prior to conducting

any maintenance activities, land-clearing or land-disturbing activities, or changes to project operation or facilities that could affect cultural resources.

While the project would have no adverse effect on known on historic properties, it is possible that unknown cultural resources could be discovered during the course of constructing or operating the project. Therefore, we recommend that 5440 Hydro consult with the New Hampshire SHPO if previously unidentified cultural resources are encountered to ensure the proper treatment of these resources. In the event of any such discovery, 5440 Hydro would discontinue all exploratory or construction-related activities until the proper treatment of any potential cultural resources is established.

Unavoidable Adverse Effects

Even with the proposed trashrack, some entrainment of small fish may occur. We would not expect any long-term effects to the fish community associated with the project operation.

VII. FINDING OF NO SIGNIFICANT IMPACT

If the Brooklyn Dam Hydroelectric Project is exempted from licensing as proposed with the additional staff-recommended measures, the project would be constructed and operated while protecting water quality, aquatic resources, terrestrial resources, and any previously unidentified cultural resources in the project area.

Based on our independent analysis, issuance of an exemption from licensing for the Brooklyn Dam Hydroelectric Project, as proposed with the additional staff-recommended measures, would not constitute a major federal action significantly affecting the quality of the human environment.

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IX. LIST OF PREPARERS

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APPENDIX A

U.S. DEPARTMENT OF THE INTERIOR
SECTION 30(c) CONDITIONS OF THE FEDERAL POWER ACT
FILED ON NOVEMBER 15, 2012

1. The Exemptee shall operate the project in an instantaneous run-of-river mode, whereby inflow to the project will equal outflow from the project at all times, and water levels above the dam are not drawn down for the purpose of generating power. Run-of-river operation may be temporarily modified if required by operating emergencies beyond the control of the Exemptee, or for short periods upon mutual agreement between the Exemptee, the U.S. Fish and Wildlife Service, and the New Hampshire Fish and Game Department.

2. The Exemptee shall within three (3) months of commencing generation, undertake a bypass reach assessment to determine the linear extent of habitat dewatered by the project during periods of no spill. The assessment shall be developed in consultation with, and require approval by, the U.S. Fish and Wildlife Service. Based on results of the assessment, the U.S. Fish and Wildlife Service may determine that discharging flow over the dam is warranted to protect instream habitat.

3. The Exemptee shall install trashracks that meet the following criteria: (1) have an approach velocity ≤ 2.0 fps (as measured six inches in front of the racks); (2) have clear spacing of one (1) inch or less; and (3) extend full depth. The trashracks shall be installed and operational concurrent with project start-up. The racks shall be required to be kept free of debris and maintained to design specifications.

4. The Exemptee shall conduct a post-operational water quality monitoring survey. The survey protocol shall be developed in consultation with, and require the approval by, the U.S. Fish and Wildlife Service. Data shall be collected over a minimum of three (3) years, and shall be initiated the first low-flow season after project start-up. If results indicate that the project is not meeting water quality standards, mitigation measures may be required (e.g., releasing more flow over the dam for reaeration).

5. The Exemptee shall, within six (6) months of the date of issuance of an exemption from licensing, prepare and file for approval by the U.S. Fish and Wildlife Service, a plan for maintaining and monitoring run-of-river operation at the project. The plan shall include a description of the mechanisms and structures that will be used, the level of manual and automatic operation, the methods to be used for recording data on run-of-river operation, an implementation schedule, and a plan for inspection by the U.S. Fish

and Wildlife Service, the Federal Energy Regulatory Commission, and the New Hampshire Department of Environmental Services. The plan shall be developed in consultation with, and require approval by, the U.S. Fish and Wildlife Service.

6. The Exemptee shall be responsible for designing, constructing, operating, maintaining and evaluating upstream and downstream fish passage facilities at this project when notified by the U.S. Fish and Wildlife Service and/or the New Hampshire Fish and Game Department that such fishways are needed. All plans and schedules associated with the design, construction, operation, maintenance, and evaluation of any prescribed fishways shall be developed by the Exemptee in consultation with, and require approval by, the U.S. Fish and Wildlife Service. The fishways shall be operated and maintained in accordance with the schedule identified by the agencies.

7. During refilling of the project reservoir after flashboard replacement, dam maintenance, or emergency drawdown, the Exemptee shall operate the project such that 90 percent of inflow to the project is released below the project and the impoundment is refilled on the remaining 10 percent of inflow. This refill procedure may be modified on a case-by-case basis with the prior approval of both the U.S. Fish and Wildlife Service and the New Hampshire Fish and Game Department.

8. The Exemptee shall notify the U.S. Fish and Wildlife Service in writing when the project commences operation. Such notice shall be sent within 30 days of start-up to: Supervisor, New England Field Office, 70 Commercial Street, Suite 300, Concord, New Hampshire 03301. The Exemptee shall furnish the Service with a set of as-built drawings concurrent with filing said plans with the Federal Energy Regulatory Commission.

9. The Exemptee shall allow the U.S. Fish and Wildlife Service to inspect the project area at any time while the project operates under an exemption from licensing to monitor compliance with their terms and conditions.

10. The U.S. Fish and Wildlife Service reserves the right to add to and alter terms and conditions for this exemption as appropriate to carry out its responsibilities with respect to fish and wildlife resources. The Exemptee shall, within thirty (30) days of receipt, file with the Federal Energy Regulatory Commission any additional terms and conditions imposed by the U.S. Fish and Wildlife Service.

11. The Exemptee shall incorporate the aforementioned terms and conditions in any conveyance—by lease, sale or otherwise—of its interests so as to legally assure compliance with said conditions for as long as the project operates under an exemption from licensing.

Document Content(s)