



United States Department of the Interior

FISH AND WILDLIFE SERVICE

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(ER-17/0398)
FERC No. 3211

October 23, 2017

Mark E. Slade, Director
Licensing
New York Power Authority
123 Main Street
White Plains, NY 10601

**RE: Gregory B. Jarvis Power Project (Hinckley Reservoir) (FERC #3211)
Review of Scoping Document 1, Pre-Application Document, and Study Requests**

Dear Mr. Slade:

The U.S. Fish and Wildlife Service (Service) has reviewed the New York Power Authority's (Authority) June 30, 2017, Pre-Application Document (PAD) for the Gregory B. Jarvis Project (Project) located on Hinckley Reservoir, West Canada Creek, Oneida and Herkimer Counties, New York. We have also reviewed the Federal Energy Regulatory Commission's (FERC) August 29, 2017, Scoping Document 1 (SD1). We have the following comments on the SD1 and the PAD. The Service is also submitting our study requests herein.

Comments on SD1

The SD1 adequately addresses most of the potential Project impacts. However, in Section 4.2.2 (Aquatic Resources), we recommend that the FERC add macroinvertebrates (with an emphasis on mussels) as a potentially impacted resource. Water level fluctuations and flow fluctuations could affect macroinvertebrate resources.

Comments on the PAD

Project Operations

Section 3.4 of the PAD discusses current Project operations. The PAD indicates that the Project does not affect water levels in the reservoir or flows in West Canada Creek because the Authority must follow the Operating Diagram. The PAD indicates that outflow from Hinckley Reservoir would be the same, regardless whether the Project was operating or not, since outflow

is determined by the 2012 Operating Plan which was based on two agreements, one between the New York State Canal Corporation (NYSCC) and the Mohawk Valley Water Authority and the other between NYSCC and Erie Boulevard Hydropower, LP.

However, the PAD indicates (pages 16-17) that the Project is a peaking project, timing releases to match power generation needs, with a greater outflow during peak demand periods and a lower outflow during non-peak periods. The Authority "...average(s) the outflow required by the Operating Diagram over the course of the day." The PAD also indicates (page 16) that "Project operations are adjusted on a twice weekly basis in accordance with the Operating Diagram." Therefore, when the Project is operating, downstream flows can fluctuate between 300 cubic feet per second (cfs) and 1,800 cfs on a daily basis, thus impacting downstream reaches of West Canada Creek. If the Project did not exist, flows would likely be released at a continuous level over the course of the day as required to meet the Operating Diagram. These daily flow changes not only affect the downstream reaches of West Canada Creek, they also alter water levels within Hinckley Reservoir. It is not clear from the PAD to what degree peaking operations impact reservoir water levels, but they clearly affect flows downstream from the Project.

Wetlands

Figure 4.6.1-1 (page 118) identifies National Wetland Inventory (NWI) wetlands. In the map legend, there are six different color codes for various NWI designations. However, only one of these color codes (Riverine) shows up on the map. It is not clear whether these data were inadvertently omitted or if a problem exists with the printing coding in the software. It would be useful if the Authority could provide stakeholders with a corrected map.

Project Shoreline

The Hinckley Reservoir shoreline is described (page 124) as being approximately 17 miles long and located within four towns. However, the Town of Russia is listed as having 18.3 miles of shoreline, with the other three towns having 7.6 miles of shoreline, for a total of 25.9 miles. It would be useful if the Authority verified the accuracy of these numbers.

Study Requests

The Service requests that the Authority conduct the following studies.

I. Fish Surveys

The Project's dam serves as a barrier to upstream and downstream fish migration and fish are subject to impingement and entrainment through the Project's turbines. The Project also modifies flows downstream from the dam and fluctuates water levels in the reservoir.

The fishery information in the PAD consists of random, non-targeted sampling conducted with a variety of gear types over a 27-year period from 1988 through 2014. An updated fishery survey is needed to adequately assess Project impacts.

The Service recommends that the Authority conduct a thorough fisheries survey in the vicinity of the Project, including both the reservoir and the river downstream from the Project. We recommend that a variety of sampling gear, including gill nets, trap nets, seines, and electroshocking, be used as appropriate for site conditions. We recommend that the survey cover at least three seasons (spring, summer, and fall), and all four seasons, if possible. The Service recommends that the study be done for 1 full year, with provision for a second year of study if data collected are inadequate based on review by the Service and the New York State Department of Environmental Conservation (NYSDEC). Information normally collected includes species, size, age, sex, and condition, as well as movement patterns and habitat utilization. Standard water quality data (i.e., water temperature, dissolved oxygen, pH, and conductivity) are usually collected in conjunction with these surveys. The focus of these studies would be on general fishery resources.

1. *Goals and Objectives*

The goals and objectives of this study are to provide information on the existing fishery resources in the vicinity of the Project, including areas upstream and downstream of the dam, to aid in the determination of what the Project impacts may be. Ideally, the information to be obtained would include both the temporal and spatial aspects of species distribution; age, size, sex, and condition data; habitat utilization; and fish movement patterns.

2. *Resource Management Goals*

West Canada Creek, in the vicinity of the existing Project, is managed as a mixed coolwater/coldwater fishery. Brook trout (*Salvelinus fontinalis*), brown trout (*Salmo trutta*), rainbow trout (*Oncorhynchus mykiss*), largemouth bass (*Micropterus salmoides*), smallmouth bass (*M. dolomieu*), and yellow perch (*Perca flavescens*) are common gamefish species.

3. *Public Interest*

The requestor is a resource agency.

4. *Existing Information*

The information in the PAD is based on a variety of random NYSDEC surveys between 1989 and 2014 for Hinckley Reservoir and between 1988 and 2010 for West Canada Creek. Updated information is necessary to determine potential Project impacts.

5. *Nexus to Project Operations and Effects*

The Project's dam serves as a barrier to upstream and downstream fish migration. Fish moving downstream are subjected to potential mortality from impingement and entrainment. The Project modifies flows downstream from the Project and impacts habitats in the impoundment via fluctuations.

6. *Methodology Consistent with Accepted Practice*

The recommended study uses standard scientific collecting techniques used in most hydro licensing activities.

7. *Level of Effort, Cost, and Why Alternative Studies Will Not Suffice*

The level of effort would involve one field crew sampling on a seasonal basis. The study would last for 1-2 years. The actual cost is unknown and would depend upon the gear types used, number of sampling locations, local labor costs, the ability to combine multiple studies (e.g., fisheries and water quality) into one task, etc. The provided literature is currently inadequate to fully address Project impacts, and there are no alternatives to conducting standard fishery surveys. However, the Applicant has flexibility to design the most cost-effective way to acquire the necessary data.

II. Fish Protection and Downstream Passage Studies

The Project's dam serves as a barrier to downstream fish migration. Fish moving downstream are subjected to potential mortality from impingement and entrainment. New licenses issued for projects throughout New York and the northeast have incorporated 1"-clear spaced trashracks to physically exclude most adult fish from the turbines, alternate downstream passage routes, and other features (e.g., reduced approach velocities, adequate plunge pools, etc.) to encourage safe downstream fish passage.

The Service recommends that the Authority explore alternatives to keep all fish species out of the turbines, with special emphasis on gamefish species such as trout and bass. We also recommend that alternatives to effectively pass fish downstream around the dam be developed. These alternatives may include any existing trash sluices located close to the intakes.

A good starting point would be a literature search of available passage designs for the species of concern, as well as information on the relative effectiveness of each design. Existing facilities at other similar dams can be investigated. Attraction flows, guidance mechanisms, and velocities are important components of an effective fish protection and downstream passage system. An effective system also diverts fish away from the turbines and guides them to the downstream passage facility. Adequate attraction and conveyance flows are critical to the proper functioning of the fishway. A passage facility that creates a bottleneck could delay downstream movement or expose the fish to excessive predation. The Service recommends that all passage facilities be designed to prevent blockage from ice and debris and be as maintenance-free as is feasible. Effective systems must be able to operate under all flow conditions experienced in West Canada Creek.

The Service recommends, in addition to literature review and on-site investigations of existing facilities, that the Authority collect site-specific data from the Project to aid in the design of protection and passage facilities. This information would include flows, velocities, water depths, and substrates.

We also recommend that the Authority collect information on the passage requirements of the fish species found in West Canada Creek. This information includes swimming speeds (including burst speeds), where in the water column these fish are likely to be moving, different forms of attractants or repellents (e.g., sound, light, etc.) that may help guide each species, etc.

1. *Goals and Objectives*

The goals and objectives of this study are to provide information on potential fish passage and protection structures that could be utilized at this site. The information obtained will allow the Service's fishway engineers to evaluate the potential effectiveness of various options.

2. *Resource Management Goals*

West Canada Creek, in the vicinity of the existing Project, is managed as a mixed coolwater/coldwater fishery. Brook trout, brown trout, rainbow trout, largemouth bass, smallmouth bass, and yellow perch are common gamefish species.

3. *Public Interest*

The requestor is a resource agency.

4. *Existing Information*

The information in the PAD is based on a variety of random NYSDEC surveys between 1989 and 2014 for Hinckley Reservoir and between 1988 and 2010 for West Canada Creek. Updated information is necessary to determine potential Project impacts. The PAD provides little information regarding passage and protection alternatives.

5. *Nexus to Project Operations and Effects*

The dam blocks fish movements both upstream and downstream. The turbine intakes may impinge or entrain fish, resulting in mortality.

6. *Methodology Consistent with Accepted Practice*

The recommended study uses standard literature reviews and site-specific data collection techniques common to most hydro licensing activities.

7. *Level of Effort, Cost, and Why Alternative Studies Will Not Suffice*

The level of effort would involve moderate literature review, discussions with fishway engineers, and site-specific data collection. The study could be completed in less than 1 year, but may require more time to design effective facilities. The actual cost is unknown and would depend upon the number of alternatives examined. The existing information in the PAD is inadequate to allow a thorough examination of alternatives. However, most of the information needed should be available in the existing literature.

III. Macroinvertebrate and Freshwater Mussel Surveys

Freshwater mussels and other aquatic macroinvertebrates are important components of the ecosystem in both Hinckley Reservoir and West Canada Creek. The PAD indicates (page 98) that there are no known surveys for freshwater mussels or macroinvertebrates within the Project vicinity. The PAD speculates on what species might be present, but provides no site-specific data. The PAD also notes a mussel kill due to low water in Hinckley Reservoir in September 2007.

The Project affects water levels in the impoundment and flows downstream from the dam. Macroinvertebrate communities can be impacted by these water level and flow fluctuations. The dam blocks fish movements. Mussels rely on fish for their reproductive success.

The Authority was unable to locate any relevant site-specific macroinvertebrate data in the literature. Therefore, sampling of mussels and other macroinvertebrates is necessary to allow a full assessment of Project impacts.

The Service recommends that sampling be conducted seasonally and include both shallow water and deep water gear, along with targeted mussel surveys. Sampling in different habitats (e.g., different depths and substrates) using a variety of techniques such as kick sampling and ponar dredge will help to identify variability in the macroinvertebrate communities. Seasonal sampling is also desirable to establish baseline conditions. For mussels, standard sampling techniques targeting mussel populations should be utilized.

1. *Goals and Objectives*

The goals and objectives of this study are to provide information on the existing macroinvertebrate communities that may be impacted by Project operations.

2. *Resource Management Goals*

West Canada Creek, in the vicinity of the existing Project, is managed as a mixed coolwater/coldwater fishery. Brook trout, brown trout, rainbow trout, largemouth bass, smallmouth bass, and yellow perch are common gamefish species. Macroinvertebrates, including mussels, are a key component of the food base for these fisheries.

3. *Public Interest*

The requestor is a resource agency.

4. *Existing Information*

The PAD indicates (page 98) that there are no known surveys for freshwater mussels or macroinvertebrates within the Project vicinity. The PAD speculates on what species might be present, but provides no site-specific data. The PAD also notes a mussel kill due to low water in Hinckley Reservoir in September 2007.

5. *Nexus to Project Operations and Effects*

The Project affects water levels in the impoundment and flows downstream from the dam. Macroinvertebrate communities can be impacted by these water level and flow fluctuations. The dam blocks fish movements both upstream and downstream. Mussels rely on fish for their movement and reproductive success.

6. *Methodology Consistent with Accepted Practice*

The recommended study uses standard scientific collecting techniques common to most hydro licensing activities.

7. *Level of Effort, Cost, and Why Alternative Studies Will Not Suffice*

The level of effort would involve one field crew sampling on a seasonal basis. The study would last for 1-2 years. The actual cost is unknown and would depend upon the gear types used, number of sampling locations, local labor costs, the ability to combine multiple studies (e.g., fisheries and water quality) into one task, etc. The provided literature is currently inadequate to fully address Project impacts, and there are no alternatives to conducting standard macroinvertebrate surveys. However, the Applicant has flexibility to design the most cost-effective way to acquire the necessary data.

IV. Base Flow Study

The current license requires a base flow of 160 cfs as measured below Trenton Falls. Inflow to the reservoir is frequently supplemented by reservoir storage during the summer months. The PAD does not include any discussion of how this flow was determined or whether it is still an appropriate base flow.

The Service recommends that a flow study be conducted to determine whether 160 cfs is an appropriate base flow for West Canada Creek. The Service recommends the use of a Delphi approach, which is simpler and less expensive than alternative methodologies such as the Instream Flow Incremental Methodology (IFIM). The Delphi approach requires the creation of a "team" representing the resource agencies and other interested parties. The team should identify target species and life stages, with appropriate priorities for each, a range of flows to be viewed, and the areal extent downriver of the Project to be viewed, along with specific viewing locations. During the study, the Authority will provide a variety of flows to the downstream reach, starting with a flow to be determined and working up to the highest flow to be studied. During each flow, the team will examine the habitat and "score" it for each species/life stage. The final data will then be used in conjunction with fisheries and habitat mapping data to negotiate a base flow regime.

The Service recommends that the Authority supplement this study by conducting habitat mapping of the downstream study reach. This mapping would identify the type of habitat in each section (e.g., riffle, run, pool) along with depths, velocities, and substrates.

1. *Goals and Objectives*

The goals and objectives of this study are to determine whether the existing base flow requirements are adequate for the protection of aquatic resources.

2. *Resource Management Goals*

West Canada Creek, in the vicinity of the existing Project, is managed as a mixed coolwater/coldwater fishery. Brook trout, brown trout, rainbow trout, largemouth bass, smallmouth bass, and yellow perch are common gamefish species.

3. *Public Interest*

The requestor is a resource agency.

4. *Existing Information*

The PAD describes how the current flow is provided but not why 160 cfs was chosen or what the benefits and impacts of this base flow are.

5. *Nexus to Project Operations and Effects*

The Project operates in a peaking mode and thus affects flows downstream from the dam. The flows can vary daily from less than 300 cfs to 1,800 cfs.

6. *Methodology Consistent with Accepted Practice*

The recommended study uses standard scientific methodology common to most hydro licensing activities.

7. *Level of Effort, Cost, and Why Alternative Studies Will Not Suffice*

The level of effort would involve a few meetings to establish the Delphi study team, identify the flow ranges to be studied, identify the species and life stages to be ranked, develop the ranking system, and familiarize participants with the Delphi study process. The actual study would likely take 1 or 2 days in the field, depending on the number of flows to be viewed and the difficulties encountered in providing and stabilizing these flows. At least one follow-up meeting would be necessary to review the data and negotiate the final flows. The habitat mapping would be done separately and would likely take a crew of two people 2 days.

The cost will be moderate and will depend on the number of flows to be viewed, the difficulty in providing these flows, and the number of meetings necessary to complete the Delphi study and negotiations. Alternative studies such as IFIM studies could be utilized, but the Service believes that the Delphi approach is appropriate for the Project and less costly than other types of studies.

V. Reservoir Modeling

The Project is operated according to an Operating Diagram that is based on multiple uses of the Hinckley Reservoir and West Canada Creek. Various litigation and settlements impacted the development of the Operating Diagram. The Operating Diagram sets upper and lower reservoir limits and Project operations are adjusted on a twice weekly basis in accordance with the Operating Diagram. The Authority does not have the rights to deviate from these release requirements. However, the Authority is authorized to operate in a peaking mode, with higher outflows during peak demand periods and lower outflows during non-peak periods, resulting in an average daily flow. This peaking can result in outflows varying from the minimum base flow of 160 cfs to the maximum generation capacity of 1,800 cfs. In addition, daily fluctuations in impoundment elevations can occur due to Project operations. However, it is not clear from the existing information how much Project operations affect the daily impoundment fluctuations. Therefore, the Service recommends that the Authority develop a reservoir model to demonstrate the impacts of the Project on daily water level fluctuations. Based on the results of this model, the Service may recommend additional habitat studies to determine the quantity and quality of littoral habitats being affected by fluctuations due to Project operations.

2. *Resource Management Goals*

West Canada Creek, in the vicinity of the existing Project, is managed as a mixed coolwater/coldwater fishery. Brook trout, brown trout, rainbow trout, largemouth bass, smallmouth bass, and yellow perch are common gamefish species.

3. *Public Interest*

The requestor is a resource agency.

4. *Existing Information*

The PAD generally describes how the Project operates, but it does not correlate impoundment levels with peaking operations. This information is necessary to determine, what, if any, impacts the Project operations are having on the habitats in the reservoir.

5. *Nexus to Project Operations and Effects*

The Project operates in a peaking mode and thus fluctuates the reservoir on a daily basis. These fluctuations are in addition to the long-term and seasonal fluctuations caused by adherence to the Operating Diagram.

6. *Methodology Consistent with Accepted Practice*

The recommended study uses standard scientific methodology common to most hydro licensing activities.

7. *Level of Effort, Cost, and Why Alternative Studies Will Not Suffice*

The level of effort would involve the development of a reservoir model using standard modeling techniques. The cost would be relatively low and would take a moderate amount of time. It may be possible to utilize the existing Operating Diagram as the basis for the reservoir model.

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The Service recommends that the Draft Study Plan developed by the Authority incorporate all of the above-listed studies. We also recommend that the study proposals incorporated into the Draft Study Plan be as detailed as possible so that all parties know exactly what is being agreed to when the study plan is approved.

Thank you for the opportunity to comment on this PAD and Scoping Document and the opportunity to provide study requests. If you have any questions or desire additional information, please contact Steve Patch at 607-753-9334.

Sincerely,



David A. Stilwell
Field Supervisor

cc: FERC Service List
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