

FEDERAL ENERGY REGULATORY COMMISSION
WASHINGTON, D. C. 20426
July 11, 2019

OFFICE OF ENERGY PROJECTS

Project No. 10489-016 – Wisconsin
River Falls Hydroelectric Project
City of River Falls Municipal Utilities

VIA FERC Service

Kevin Westhuis, Utility Director
City of River Falls Municipal Utilities
222 Lewis Street
River Falls, WI 54022

Reference: Study Plan Determination for the River Falls Hydroelectric Project

Dear Mr. Westhuis:

Pursuant to 18 C.F.R. § 5.13(c) of the Commission's regulations, this letter contains the study plan determination for the River Falls Hydroelectric Project (River Falls Project). The determination is based on the study criteria set forth in section 5.9(b) of the Commission's regulations, applicable law, Commission policy and practice, and the record of information for the project.

Background

The River Falls Project consists of the upstream 250-kilowatt (kW) Junction Falls development and the downstream 125-kW Powell Falls development. The City of River Falls Municipal Utilities (City of River Falls) proposes to relicense the Junction Falls development and decommission the Powell Falls development. On February 11, 2019, the City of River Falls filed its proposed study plan (PSP) for six studies in support of its proposal. The PSP includes studies on hydrology, aquatic resources, water quality, terrestrial resources, recreation, and cultural resources.

The City of River Falls held an Initial Study Plan Meeting on March 13, 2019, to discuss the PSP. Comments on the PSP were filed by Commission staff, the Wisconsin Department of Natural Resources (Wisconsin DNR), the Kinnickinnic River Land Trust, Inc., and the Kiap-Tu-Wish Chapter of Trout Unlimited (Trout Unlimited). On June 11, 2019, the City of River Falls filed a revised study plan (RSP) that includes three new proposed studies; *Aquatic Invasive Species Survey*, *Lake George Shoreline Habitat Assessment*, and a *Riverine Habitat Evaluation below Powell Falls*. The RSP includes revisions to four of the proposed studies: *Water Quality Study*; *Wetland, Riparian, and Terrestrial Resources Survey*; *Recreation Facility Inventory and Recreation Use*

Assessment; and the Cultural Resources Study. The RSP also contains a newly proposed Powell Falls Decommissioning Plan.

Comments on the RSP were filed by Wisconsin DNR, Trout Unlimited, Friends of the Kinni, Wisconsin State Historic Preservation Office, and Patricia K. La Rue.

General Comments

Some of the comments received do not specifically address study plan issues. These include comments on proposed license requirements. This determination does not address such comments, but rather addresses only the merits of the RSP submitted pursuant to section 5.13 of the Commission's regulations and comments received thereon.

Study Plan Determination

The City of River Falls' RSP is approved with the staff-recommended modifications discussed in Appendix B. As indicated in Appendix A, five studies are approved as proposed, four are approved with modifications, and six are not required. This determination also addresses the studies requested by stakeholders that were not proposed by the City of River Falls (*see* Appendix A).

The specific modifications and bases for modifying the City of River Falls' study plan are discussed in Appendix B. Commission staff reviewed all comments and considered all study plan criteria in section 5.9 of the Commission's regulations. However, only the specific study criteria particularly relevant to the determination are referenced in Appendix B.

Studies for which no issues were raised are not discussed in this determination. Unless otherwise indicated, all components of the approved studies not modified in this determination must be completed as described in the City of River Falls' RSP. Pursuant to the revised process plan, the initial study report for all studies in the approved study plan must be filed by January 31, 2020.

Nothing in this study plan determination is intended, in any way, to limit any agency's proper exercise of its independent statutory authority to require additional studies. In addition, the City of River Falls may choose to conduct any study not specifically required herein that it feels would add pertinent information to the record.

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If you have any questions, please contact Shana Wiseman at shana.wiseman@ferc.gov or (202) 502-8736.

Sincerely,

for
Terry L. Turpin
Director
Office of Energy Projects

Enclosure: Appendix A – Summary of Determinations on Proposed and Requested Studies
Appendix B – Staff Recommendations on Proposed and Requested Studies

APPENDIX A**SUMMARY OF DETERMINATIONS ON PROPOSED AND REQUESTED STUDIES**

Study	Recommending Entity	Approved	Approved with Modifications	Not Required
Hydrologic and Hydraulic Evaluation Study	City of River Falls			X
Hydrologic Impacts Study	Kiap-Tu-Wish Chapter of Trout Unlimited (Trout Unlimited)			X
Water Quality Study	City of River Falls		X	
Fish Survey	Wisconsin Department of Natural Resources (Wisconsin DNR); Trout Unlimited			X
Mussel Survey	Wisconsin DNR		X	
Macroinvertebrate Survey	Wisconsin DNR; Trout Unlimited			X
Lake George Shoreline Habitat Assessment	City of River Falls	X		
Aquatic Invasive Species Survey	City of River Falls	X		
Wetland, Riparian, and Terrestrial Resources Survey	City of River Falls	X		
Riverine Habitat Evaluation below Powell Falls	City of River Falls		X	
Recreation Facility Inventory and Recreation Use Assessment	City of River Falls	X		
Comprehensive Study of Recreation, Tourism, and Aesthetic Resources Quantifying Their Economic Values	Friends of the Kinni			X

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Study	Recommending Entity	Approved	Approved with Modifications	Not Required
Cultural Resources Study	City of River Falls		X	
Powell Falls Decommissioning Plan	City of River Falls	X		
Economic Analysis of the Costs of Operation, Maintenance, and Benefits	Friends of the Kinni			X

APPENDIX B

STAFF RECOMMENDATIONS ON PROPOSED AND REQUESTED STUDIES

I. Required Studies

Hydrologic and Hydraulic Evaluation

Applicant's Proposed Study

The purpose of the hydrologic and hydraulic evaluation is to predict the hydraulic characteristics of the reach of the Kinnickinnic River presently occupied by the Powell Falls Dam and reservoir following the removal of Powell Falls Dam. These hydraulic characteristics include water surface elevations, velocities, depths and widths associated with a typical summer low flow, 2-year flood, 10-year flood, and the 100-year flood. The hydraulic component of the evaluation would be completed using the U.S. Army Corps of Engineers' Hydrologic Engineering Center–River Analysis System (HEC-RAS) software.

The City of River Falls proposes to review and refine the existing HEC-RAS model for the Kinnickinnic River developed by Short Elliott Hendrickson (SEH, 2017). The City of River Falls states that these refinements include: (1) reintroducing Junction Falls Dam into the model;¹ (2) reviewing the model's input geometry and site conditions to determine whether a topographic survey of the channel and bedrock near the Powell Falls Dam, prior to dam removal, would improve the model; (3) and if the model is determined to be improved by the addition of a topographic survey, a topographic survey would be completed on the downstream side of the Powell Falls Dam and incorporated into the model. The post-removal channel form would be estimated based on previous sediment investigations (Inter-Fluve, 2016). The City of River Falls states that the modeling results would be used in the management or enhancement of this reach and its riparian areas.

For the hydrologic component, the City of River Falls proposes to review existing flood frequency estimates and, if appropriate, update the flow rates used for floodplain analysis and dam safety assessment. Flow rate data would be obtained from: (1) the U.S. Geological Survey's (USGS) Guidelines for Determining Flood Flow Frequency – Bulletin 17 C (England, et al, 2018) to develop a flood frequency curve at the USGS Kinnickinnic River gage (gage no. 05342000);² (2) retrieval (if possible) of the Hydrologic Engineering Center–Hydrologic Modeling System (HEC-HMS) software

¹ The SEH model was developed to predict the hydraulic characteristics associated with the removal of both the Powell Falls and Junction Falls Dams, which were removed from the HEC-RAS geometry file.

² The USGS gage is located about 7.5 miles downstream of the River Falls Project.

model used for the Flood Insurance Study from the Federal Emergency Management Agency (FEMA, 2011) and verification of that model against flood records at USGS gage no. 05342000; (3) HEC-HMS simulation of the 24-hour, 100-year precipitation depth specified in National Oceanic and Atmospheric Administration Atlas 14 and using the MSE-3 temporal distribution (NOAA, 2013); and (4) application of the current (2017) USGS regression equations for Wisconsin. The City of River Falls states that any update of the 100-year flood could be used to support a dam safety assessment of the Junction Falls Dam.

The City of River Falls states that as a participant in the National Flood Insurance Program, it would need to provide an analysis supporting a Letter of Map Revision if Powell Falls Dam is removed. The City of River Falls proposes to defer submittals related to floodplain zoning or the National Flood Insurance Program until the decommissioning process is under way (likely 2025 or 2026). The City of River Falls also states that Wisconsin's floodplain management regulations require floodplain zoning consistent with existing hydraulic geometry. Therefore, the City of River Falls states that the study would be used to comply with Wisconsin's regulations and the National Flood Insurance Program.

Comments on the Study

None.

Discussion and Staff Recommendation

The City of River Falls states that the water surface profiles and other hydraulic data gathered as a result of the study would be for informational purposes, but does not state how the information would inform potential license requirements. The City of River Falls also states that this hydrologic and hydraulic evaluation would be used for compliance with Wisconsin's floodplain management regulations and the National Flood Insurance Program. Because the hydrologic and hydraulic evaluation would not support our environmental assessment of the proposed dam removal or would not inform the development of license requirements (section 5.9(b)(5)), we do not recommend the City of River Falls conduct the proposed hydrologic and hydraulic evaluation. However, this does not preclude the City of River Falls from conducting the hydrologic and hydraulic evaluation and using the information as it sees fit.

Water Quality Study

Applicant's Proposed Study

The City of River Falls proposes to deploy water quality sondes³ and continuously monitor dissolved oxygen (DO) and temperature at 15-minute intervals from July 1 to

³ A sonde is an instrument probe that automatically collects data, such as DO levels, about its surroundings.

September 15 in 2019 and May 1 to September 15 in 2020 to document baseline water quality conditions. The City of River Falls would conduct the monitoring at the following locations: (1) Kinnickinnic River upstream of Lake George (Junction Falls reservoir); (2) Lake George; (3) downstream of Junction Falls Dam; and (4) downstream of Powell Falls Dam. The City of River Falls would visit the water quality sondes every two weeks, at which time the data would be downloaded and the sondes would be checked, calibrated, and then re-deployed.

Comments on the Study

Kiap-TU-Wish Chapter of Trout Unlimited (Trout Unlimited) recommends that the City of River Falls include additional water quality variables in its study and collect data from April through October for two years to adequately assess water quality conditions in Lake George and evaluate potential effects of project operation on water quality in the Kinnickinnic River downstream of the project. Specifically, Trout Unlimited recommends the continuous monitoring of DO, temperature, pH, and conductivity, along with the periodic monitoring of turbidity, suspended solids, various forms of nitrogen and phosphorus, trace metals, bacteria, and chlorophyll. Trout Unlimited also recommends weekly photography documenting the timing and spatial extent of algal mats on Lake George.

Discussion and Staff Recommendation

Continuous monitoring of pH and conductivity, and the periodic monitoring of turbidity, suspended solids, nitrogen and phosphorus concentrations, trace metals, bacteria, and chlorophyll levels may provide additional information to describe existing water quality conditions, but there is no indication that project operation has a significant effect on these variables. In general, these variables are influenced by other activities in the basin and have not been directly connected to the operation of the project (section 5.9(b)(5)). Further, existing information from other studies is sufficient to generally characterize water quality conditions, including pH, conductivity, suspended solids, trace metals, nitrogen, phosphorus, and chlorophyll levels (section 5.9(b)(4); *see* Wisconsin DNR, 2019). However, a description and photographs of algal mats on Lake George could be useful in interpreting diurnal and/or seasonal changes in DO levels, and would provide information to generally describe aquatic habitat conditions in the reservoir. As such, we recommend modifying the study to include a description of the presence of algal mats, including photographs of the reservoir, every two weeks during the sonde checks.

Regarding the study period, existing information on river temperature downstream of the project suggest that initiating the water quality monitoring on May 1 should be adequate to collect information during a period when the project could affect critical temperatures or DO levels for trout and other aquatic species (Noren, 2003). However, it is unclear if ending the water quality study on September 15 each year would be appropriate to describe project effects on water quality and habitat conditions for aquatic species within and downstream of the project because no existing DO or temperature data

is available to support ending the study on September 15. Because the City of River Falls would collect data in 2019 and 2020, we would be able to examine the DO and temperature data collected in the initial study report and determine the need for an extended study period in 2020, based on observed project effects on water quality and DO and temperature thresholds for aquatic species during the 2019 study period. As such, we do not recommend extending the study period beyond September 15 at this time.

Riverine Habitat Evaluation below Powell Falls

Applicant's Proposed Study

The City of River Falls proposes to conduct a riverine habitat survey in the 9.9 mile section of the Kinnickinnic River between Powell Falls Dam and its confluence with the St. Croix River. The purpose of the study is to document existing habitat conditions in this section. Specifically, the City of River Falls proposes to conduct a desktop evaluation using changes in river slope, confluences with large tributaries, and/or aerial imagery to identify distinct riverine reaches.⁴ After the distinct reaches are identified, the City of River Falls would field verify and select a subset of representative riverine reaches for further assessment. In each representative study reach, the City of River Falls would: (1) collect quantitative habitat data, including channel dimensions, longitudinal slope, substrate size, embeddedness, and depth of fine sediment at up to three transects;⁵ (2) map mesohabitats along transects; (3) record the median diameter of 100 individual substrates along transects; (4) record the median diameter of 10 to 30 of the largest freshly mobilized clasts for at least one depositional bar, if present at the transects; (5) quantify large woody debris, number of pools, and pool depth within a study reach; (6) estimate substrate cover within a study reach; (7) determine the approximate size of immobile substrate within riffles; and (8) qualitatively characterize the channel, streambank stability, floodplain deposits, and provide photo documentation of the stream channel.

Comments on the Study

Trout Unlimited states that it is difficult to determine if the study would adequately cover the 9.9 miles of the Kinnickinnic River between Powell Falls Dam and

⁴ In general, a reach is a length of river with similar hydrologic conditions, such as discharge, depth, cross-sectional area, and slope.

⁵ For the purposes of this study, a transect is a cross-sectional profile where spot elevations and habitat characteristics are surveyed across the river channel and stream banks. Channel shape and habitat conditions within a defined study reach can be described in part by a series of transects within a particular study reach.

the St. Croix River because the City of River Falls did not estimate the number of reaches it would include in the survey.

Discussion and Staff Recommendation

It is not possible at this time to determine if the City of River Falls would survey an adequate number of study reaches to accurately characterize the 9.9 miles of riverine habitat downstream of Powell Falls Dam. Despite this limitation, the goals and methods of this study require the City of River Falls to collect data in representative reaches and describe habitat conditions for the entire 9.9 mile segment of the Kinnickinnic River downstream of Powell Falls Dam. Because the type and number of distinct reaches is unknown, there is no basis to judge whether or not a specific number of study reaches would be adequate to describe riverine habitat. If the study does not collect enough data to meet the goals of this study, additional data collection may be considered after review of the initial study report. Therefore, there is no need to estimate the number of study reaches at this time.

Limiting transect data collection to a maximum of three transects per study reach and limiting mesohabitat mapping and substrate measurements to the transects, as proposed, may not provide enough information to describe habitat conditions within a particular study reach because channel dimensions, mesohabitats, and substrate can be variable within a particular study reach (section 5.9(b)(6)). In order to describe the range of channel dimensions and habitats in the Kinnickinnic River, we recommend the City of River Falls map mesohabitats within representative reaches⁶ and collect data at a minimum of two transects within each mesohabitat type (i.e., riffles, runs, and pools if present). At each transect, the City of River Falls should record physical channel dimensions, longitudinal slope, substrate size, embeddedness, and depth of fine sediments along the transects, as proposed. In addition, the 100-count substrate survey (i.e., pebble count) and substrate measurements at depositional bars should occur at the reach scale, rather than at individual transects. We recommend at least one 100-count substrate survey (Bevenger and King, 1995) and up to three 10-30 count surveys of the largest freshly mobilized substrates observed on a depositional bar(s) (Kappesser, 2002), in each study reach. We anticipate the cost of collecting data at additional transects and conducting a pebble count and recording substrates at up to 3 depositional bars within study reaches would be minimal.

⁶ Multiple acceptable methods are available to determine a study reach length, including Wisconsin DNR's Guidelines for Evaluating Habitat of Wadeable Streams.

Cultural Resources Study

Applicant's Proposed Study

The City of River Falls proposes to conduct historic architectural and archaeological surveys to identify historic and archaeological resources within the area of potential effect (APE).

Comments on the Study

The Wisconsin State Historic Preservation Office supports the cultural resource study.

Discussion and Staff Recommendation

As part of the archaeological survey, the City of River Falls proposes to conduct a Phase I survey to identify archaeological sites in the APE, with the exception of the shorelines of Lake George and Lake Louise (Powell Falls reservoir). For the shorelines, the City of River Falls proposes to conduct a shoreline monitoring survey⁷ to determine if any archaeological sites are exposed along the reservoir banks.

The National Historic Preservation Act and the National Environmental Policy Act require that all historic properties within the APE be identified. Only after properties eligible for, or listed on, the National Register of Historic Places are identified and located, can project-related effects be accurately assessed.⁸ Monitoring is generally conducted to determine if there are changes occurring to archaeological sites over a period of time, but not as a way to initially identify archaeological sites. Rather a Phase I survey is conducted to identify sites (section 5.9(b)(6)). Therefore, we recommend that the cultural resources study be modified to include a Phase I survey be conducted along the shorelines of the reservoirs.

II. Studies Requested but Not Adopted by the City of River Falls

Hydrologic Impacts Study

Study Request

Trout Unlimited recommends a hydrologic impacts study that would include an assessment of existing Kinnickinnic River flow data to evaluate the extent to which the River Falls Project has historically maintained the minimum flow downstream of Powell Falls Dam and run-of-river mode required under the existing license. Trout Unlimited states that recreational users along the lower Kinnickinnic River (downstream from the River Falls Project) have noted sudden flow fluctuations that are likely attributed to

⁷ The City of River Falls does not explain what it means by a “monitoring survey”.

⁸ See FirstLight Hydro Generating Company, 162 FERC ¶ 61,235 (2018).

irregular operation of the project. Trout Unlimited also states that the Nonpoint Source Control Plan for the Kinnickinnic River Priority Watershed Project (Wisconsin DNR, et al, 1999) found that project operation contributes to fluctuations in flow in the Kinnickinnic River downstream of the project. Trout Unlimited states that a desktop analysis of the historic flows measured at USGS gage no. 05342000, along with project operation and maintenance data, would identify whether project operation and/or maintenance activities are causing the fluctuations in streamflow.

The City of River Falls states it does not propose to conduct the hydrologic impacts study because: (1) existing information is sufficient and Trout Unlimited has failed to demonstrate the need for additional information; (2) a study to examine past operational compliance with the license requirements is unnecessary to inform any future license, if issued; and (3) it is committed to maintaining a run-of-river project operation for the Junction Falls development in any subsequent license, if issued, and it would develop a project operation plan to be submitted with the license application that would describe how it would maintain run-of-river project operation.

Discussion and Staff Recommendation

The City of River Falls' proposal to decommission the Powell Falls development and remove the dam would result in the Junction Falls development alone controlling the flow from the project into the Kinnickinnic River. The historic USGS gage no. 05342000 record reflects the in-line operation of both the Junction Falls and Powell Falls developments, which would not represent conditions in the Kinnickinnic River downstream of the project with only the Junction Falls development in operation (section 5.9(b)(5)).

Also, the City of River Falls' proposed project operation plan would describe how it would maintain run-of-the-river conditions downstream of the Junction Falls development. Submitting a project operation plan with the license application would provide stakeholders and agencies with an opportunity to make comments and recommendations. Therefore, we do not recommend Trout Unlimited's requested hydrologic impacts study.

Fish Survey

Study Request

Wisconsin DNR recommends that the City of River Falls conduct electrofishing in Lake George to describe the diversity and abundance of the fish community in the reservoir, and to provide data to inform Wisconsin DNR's fisheries management decisions. Trout Unlimited also recommends that the City of River Falls conduct electrofishing in Lake George to characterize the existing fish community.

Discussion and Staff Recommendation

The City of River Falls does not propose fish surveys in Lake George. In its revised study plan (RSP), the City of River Falls explains that a previous survey of each reservoir,⁹ other fisheries reports published between 1971 and 1998, and recent fish surveys conducted between 1990 and 2015 in riverine reaches of the Kinnickinnic River are available and describe the fish communities upstream, downstream, and within the project area. Results from the historic fish surveys presented in the RSP show that the fish communities in the reservoirs consist of few species. In Lake George, the historic survey results suggest that the fish community includes largemouth bass, green sunfish, black crappie, common carp, black bullhead, white sucker, brown trout, and minnow species. More recent fish surveys, conducted throughout the riverine portions of the Kinnickinnic River watershed in 1996, confirm the presence of some of these species, as well as brook trout, smallmouth bass, and 22 minnow and forage species (Wisconsin DNR, 1998). Additional surveys conducted throughout the mainstem of the Kinnickinnic River between 1990 and 2015 show that brown and brook trout dominate the fish community, with few other species present in some of the surveyed reaches. Based on this information, we expect that the reservoirs would support a fish community dominated by warmwater species. In Lake George, trout and other cool/cold water species would likely be present in at least some areas of the reservoir dependent on season and water quality conditions because the riverine surveys upstream of Lake George indicate brown trout density is high and historic surveys show that brown trout inhabited Lake George during late September.

Lake George is small (15.5 acres), shallow (approximately 5 feet deep), contains mostly fine sediments, and lacks diverse quality habitats that would support a robust fishery. Further, there is no information that suggests the fish community in Lake George would be substantially different than the existing survey data suggests because habitat conditions today are similar to habitats described during the previous surveys. As such, existing information from the historic surveys and recent riverine surveys are adequate to describe the existing fish community and inform our analysis of potential project effects and potential license conditions (section 5.9(b)(4); section 5.9(b)(5)); therefore, we do not recommend the City of River Falls conduct fish surveys in Lake George.

Mussel Survey

Study Request

In its initial study request filed on December 14, 2018, Wisconsin DNR recommended that the City of River Falls conduct a mussel survey within the project area downstream to the St. Croix River to determine mussel presence, density, and diversity, as well as characterize mussel habitat. In its subsequent comments on the proposed study plan (PSP), Wisconsin DNR indicates that it no longer thinks a mussel study is needed at

⁹ Historic electrofishing surveys of the reservoirs were conducted in 1962.

this time, but Wisconsin DNR states that an assessment of project effects on downstream mussel communities in the St. Croix River is necessary and could be completed prior to removal of Powell Falls Dam. In comments on the PSP, staff indicated that the existing information was not adequate for its analysis of potential project effects and that a mussel survey of the Kinnickinnic River and St. Croix River could provide information necessary for an analysis of project effects on mussels.¹⁰ In its comments on the RSP, Wisconsin DNR states that it supports Commission staff's comments on the PSP regarding a mussel assessment downstream of the project.

Discussion and Staff Recommendation

The City of River Falls does not propose mussel surveys in the Kinnickinnic River or the St. Croix River. Rather, the City of River Falls provides consultation records with Wisconsin DNR indicating that the Kinnickinnic River may not be suitable for mussels because of relatively cold water temperatures and limited presence of suitable host fish species. The City of River Falls also notes that mussels have not been observed in the Kinnickinnic River during previous surveys for fish, macroinvertebrates, or physical habitat. As for the St. Croix River, the City of River Falls contends that no additional mussel surveys are warranted because the mussel community in the St. Croix River is well documented.

Most of the Kinnickinnic River is classified as a Class I cold-water trout stream that consists mostly of brown trout with few brook trout present downstream of Powell Falls Dam.¹¹ Brown trout are not suitable host fish for mussels found in the St. Croix River, while brook trout may be a suitable host to some common species of mussels (INHS, 2017).¹² In general, existing electrofishing survey data indicates that potential host fish for mussels are not abundant in the Kinnickinnic River downstream of the project. Conversely, the downstream-most reach of the Kinnickinnic River is characterized as a warmwater fishery (Wisconsin DNR, 1998) and potential host species

¹⁰ In comments on the Pre-Application Document (PAD), staff requested that the City of River Falls provide any available information on mussels that occur in the St. Croix River between the Kinnickinnic River and the Mississippi River so that staff could evaluate existing information and potential effects on mussels. The City of River Falls filed the additional information with its PSP.

¹¹ In Wisconsin, a Class I trout stream is a high quality trout water with sufficient natural reproduction to sustain populations of wild trout at or near carrying capacity of the water.

¹² Laboratory studies indicate that brook trout may be a suitable host for creeper and creek heelsplitter mussels, but wild caught brook trout are not known to be a host fish for mussel species present in the St. Croix River.

for mussels, including largemouth bass, have been collected in the lower reaches of the Kinnickinnic River. Further, host species for mussels often include small minnows, darters, and sculpins (INHS, 2017) that are known to occur in the Kinnickinnic River watershed (Wisconsin DNR, 1998).

An abundant and diverse mussel community exists in the St. Croix River, and according to information provided in the PAD, three federally listed endangered mussel species; Higgins eye, snuffbox, and spectaclecase, occur in St. Pierce County, Wisconsin, presumably within the St. Croix River near or downstream of the confluence with the Kinnickinnic River. However, the results of existing mussel surveys filed with the proposed and revised study plans only confirm the presence, and provide density estimates for, the Higgins eye mussel in an area approximately 6 miles downstream of the Kinnickinnic River delta.¹³ It is unknown if mussel habitat or mussel density in the surveyed area is similar to habitat in the downstream-most reach of the Kinnickinnic River, the Kinnickinnic River delta, or other areas within the project's potentially affected environment between the delta and the known survey site approximately 6 miles downstream. Therefore, it does not appear that the existing information is sufficient for our analysis because the surveys may not be representative of the area potentially affected by the project and would not provide information to reasonably characterize the extent of harm to mussels that the proposed dam decommissioning and removal would cause (section 5.9(b)(4)).

Despite a lack of information on mussel occurrence, abundance, and distribution in areas that may be affected by the project (i.e., action area), we expect that multiple listed mussels could be present in the downstream-most reach of the Kinnickinnic River and the St. Croix River downstream of the Kinnickinnic River delta because warm water habitats and suitable host fish species are likely present in these areas. Because listed mussels could be present in the project's action area, and to meet our responsibilities under Section 7 of the Endangered Species Act, we must document the listed mussel population potentially affected by the project proposal and analyze any potential project-related effects, including the effects of decommissioning Powell Falls Dam, on these listed mussels.

In order to obtain adequate information for staff's analysis of project effects, inform the development of potential license conditions (section 5.9(b)(5)), and develop a biological assessment to meet the requirements of consultation under the endangered species act, we recommend the City of River Falls conduct a mussel survey focused on documenting mussel habitat (location, depth, and substrate), and the occurrence, density, distribution, and relative abundance of any federally listed mussel species present within the downstream-most 0.81 mile of the Kinnickinnic River, the Kinnickinnic River delta, and additional habitats in the 6-mile reach of the St. Croix River between the

¹³ The delta is a sediment deposit located at the confluence of the Kinnickinnic River with the St. Croix River.

Kinnickinnic River delta and the Mississippi River. We recommend the City of River Falls employ qualitative and quantitative mussel survey methods consistent with Minnesota's Mussel Survey Protocol (Minnesota Department of Natural Resources, 2013) or similar methods to conduct the survey. The City of River Falls should implement the survey after consultation with FWS and Wisconsin DNR on the locations to implement the mussel survey. The City of River Falls should provide the results of the survey, including documentation of consultation with the agencies, in a report and file it with the initial study report. We estimate the cost of implementing this study to be approximately \$40,000.

Macroinvertebrate Survey

Study Request

Wisconsin DNR recommends that the City of River Falls collect macroinvertebrate samples upstream of Lake George and downstream of Lake Louise to assess project effects on water quality. Wisconsin DNR states that new macroinvertebrate data is needed to describe the existing environment, as well as to develop potential license measures. Trout Unlimited recommends that the City of River Falls conduct a macroinvertebrate survey in Lake George to characterize current conditions and evaluate the effects that Lake George has on the macroinvertebrate community by comparing the macroinvertebrate community in the reservoir to macroinvertebrates in riverine reaches upstream and downstream of the reservoir.

Discussion and Staff Recommendation

The City of River Falls does not propose macroinvertebrate surveys in Lake George, nor does it propose surveys upstream and downstream of the reservoirs. In its RSP, the City of River Falls indicates that multiple macroinvertebrate surveys were conducted upstream and downstream of the reservoirs and states that these surveys provide the information needed for an analysis of project effects.

Several macroinvertebrate surveys conducted at various locations upstream and downstream of the reservoirs between 1995 and 2005 provide information to describe the macroinvertebrate community and water quality at the project. Additional macroinvertebrate surveys conducted downstream of the project in 2010, 2011, and 2013 suggest that the macroinvertebrate community and water quality conditions are representative of a healthy ecosystem, similar to survey results of the previous surveys (Wisconsin DNR, 2019). Project operation has not changed since the macroinvertebrate surveys were completed, and there is no information to suggest the macroinvertebrate community in the Kinnickinnic River would have changed since the last surveys were completed.

In Lake George, we expect the macroinvertebrate community would consist of organisms typically found in lentic environments with fine substrates (e.g., midges, scuds, worms, and burrowing mayflies). Differences in lentic and lotic macroinvertebrate

communities are well documented in scientific literature, and a survey of Lake George is not necessary to evaluate potential project effects on the macroinvertebrate community.

As such, existing information from the Kinnickinnic River and other sources is adequate to describe the macroinvertebrate community within and downstream of the project area and inform our analysis of potential project effects (section 5.9(b)(4); section 5.9(b)(5)). Therefore, we do not recommend the City of River Falls conduct additional macroinvertebrate surveys.

Comprehensive Study of Recreation, Tourism, and Aesthetic Resources of the River Falls Hydroelectric Project Quantifying Their Economic Values in Comparison to Alternative Futures for the Same Area Quantifying Each Alternative's Social and Economic Impact for the General Public

Study Request

Friends of the Kinni recommends that the City of River Falls conduct an economic valuation of current recreational, tourism, and aesthetic resources at the River Falls Project in comparison to the economic value of potential recreational, tourism, and aesthetic opportunities if one or both dams are removed. Specifically, Friends of the Kinni recommends that the study consider the following alternatives: (1) no-action alternative- the project would continue to operate as it does under the existing license; (2) the licensee's proposed action- maintaining Junction Falls Dam and decommissioning and removing Powell Falls Dam; and (3) project decommissioning- both Junction Falls and Powell Falls Dams would be removed.

The study would include: (1) a baseline inventory and survey of all current recreational opportunities along the entire length of the Kinnickinnic River; (2) an assessment of tourism levels for area communities that have waterfalls and/or have had dams removed and recreational resources and experiences revitalized because of dam removal; (3) consultation with the Great Rivers Confluence and the Great River Road to assess the potential tourism effect of dam removal and restoration of the falls;¹⁴ (4) an estimation of the aesthetic value of the project with the dams and the aesthetic value without the dams after restoration of the falls; and (5) a comparative analysis of the value of the project and its projected revenue/expenses to the economic value of potential opportunities (e.g. recreation, tourism, aesthetics) with removal of one or both dams.

Discussion and Staff Recommendation

In its RSP, the City of River Falls states that economic information on project costs, such as operation and maintenance, is already available and would be provided in its final license application, as required by section § 5.18 and 4.61 of the Commission's regulations. Further, the City of River Falls states it is not proposing to decommission

¹⁴ The project is located at a natural waterfall that is flooded by the project (City of River Falls PAD (2018), section 5.8, *Aesthetic Resources*).

and remove Junction Falls Dam; therefore, evaluating an alternative that includes removal of both dams would not inform the analysis of the proposed action. Finally, the City of River Falls states that although it does not propose to survey any areas outside the project boundary to evaluate tourism to the area, it does propose to conduct visitor counts and include survey questions that would address why tourists visit the project as a part of its proposed Recreation Facility Inventory and Recreation Use Assessment Study.

The City of River Falls, as part of its Recreation Facility Inventory and Recreation Use Assessment Study, proposes to conduct an inventory of existing project recreation sites and facilities and an assessment of recreation use and demand at the project by performing spot counts and recreation user surveys at each public recreation site and/or facility. The existing information on recreation opportunities in the region, coupled with information that should be obtained from the proposed Recreation Facility Inventory and Recreation Use Assessment Study, would provide baseline information on recreational use, access, and demand at the project and in the project region.

Although Friends of the Kinni recommends that the City of River Falls conduct the study, it does not provide a methodology on how to estimate the economic value of these resources in its study request (section 5.9(b)(6)), nor does it justify how this information would inform future licensing requirements (section 5.9(b)(5)). It is difficult to place an economic value on a recreational experience, such as boating on a river versus boating on a reservoir. It is even more difficult to estimate the economic value of a potential recreational experience that doesn't exist (e.g. an aesthetic value of a waterfall). The Federal Power Act does not require the Commission to place a dollar value on nonpower benefits nor does the Commission typically attempt to evaluate these resources in terms of their economic value. As the Commission has stated previously “for non-power resources such as aquatic habitat, fish and wildlife, recreation, and cultural and aesthetic values, to name just a few, the public interest cannot be evaluated adequately only by dollars and cents.”¹⁵ Rather, our analysis includes the effects of the proposed action on public access to existing recreation and aesthetic opportunities at the project in terms of recreational use, access, and demand. Because of these reasons, we do not recommend that the study be required.

Economic Analysis of the Costs of Operation, Maintenance, and Benefits

Study Request

Friends of the Kinni recommends that the City of River Falls conduct an economic study to examine the economic feasibility and performance of the operation and maintenance of the River Falls Project. Friends of the Kinni states that the study would allow the community and the City of River Falls to have an understanding of the various

¹⁵ *Hydroelectric Licensing under the Federal Power Act*, 104 FERC ¶ 61,109 at pp. 45-46 (2003), *order on reh'g* 106 FERC ¶ 61,037 (2004) (citing *Great Northern Paper, Inc.*, 85 FERC ¶ 61,316 at pp. 62,244 – 62,245 (1998)).

economic issues affecting the project. The proposed economic study would evaluate the capital, operational, and maintenance costs of the project, using generally accepted accounting principles. Friends of the Kinni states that its proposed study, combined with other study results, would help to define the best use of the Kinnickinnic watershed, as well as the profitability of the Junction Falls development. The economic analysis of the costs of operation, maintenance, and benefits study would have consist of: (1) historical financial analysis; (2) projected cash flow and net profitability analysis; and (3) decommissioning of both dams, including analyzing the economic value of a restored Kinnickinnic River. The study would use existing and available information to evaluate the economic effects of the River Falls Project on the community.

Discussion and Staff Recommendation

The City of River Falls proposes only to decommission and remove the dam for the Powell Falls development. As such, the City of River Falls states that evaluating the decommissioning with dam removal of the Junction Fall development is not necessary.

In its RSP, the City of River Falls explains that it is financially responsible for its utility assets, and routinely conducts financial analyses to ensure that its assets are appropriately managed. The City of River Falls advises the City Council on matters regarding financial decisions and long-range planning, and the City Council holds public meetings regarding the budget, including budgetary items for the project. The City of River Falls states that the amount of economic information already available, including project costs, would support the preparation of a license application.

In our Scoping Document 2 for the River Falls Project, issued February 7, 2019, we stated that prior to conducting a decommissioning analysis with or without dam removal, we would wait until an applicant actually proposes to decommission a project, or until a participant in a licensing proceeding demonstrates, with supporting evidence, that there are serious resource concerns that cannot be mitigated if the project is relicensed. The City of River Falls is not proposing to decommission the Junction Falls development, and at this time, there is no evidence of an unavoidable, serious resource concern with the relicensing of this development that could not be mitigated. Therefore, further analysis of removal of the Junction Falls development is not required at this time. This approach is consistent the Commission's obligations under sections 4(e) and 10(a) of the Federal Power Act to equally consider all developmental and environmental interests, and to issue licenses that strike the appropriate balance among the competing interests.

In determining whether to issue a license for an existing hydroelectric project, the Commission considers a number of public interest factors, including the projected economic benefits of project power. The basic purpose of the Commission's economic analysis is to provide a general estimate of the potential power benefits and the costs of a project, and reasonable alternatives to project power. The analysis helps to support an informed decision concerning what is in the public interest with respect to a proposed

license. In our developmental analysis in an environmental assessment, we would look at the project's use of the Kinnickinnic River for hydropower purposes to see what effects various environmental measures would have on the project's costs and power generation. Under the Commission's approach to evaluating the economics of hydropower projects, as articulated in *Mead Corp.*,¹⁶ the Commission compares the current project cost to an estimate of the cost of obtaining the same amount of energy and capacity using a likely alternative source of power for the region (cost of alternative power). If the difference between the cost of alternative power and total project cost is positive, the project produces power for less than the cost of alternative power. If the difference between the cost of alternative power and total project cost is negative, the project produces power for more than the cost of alternative power.

Also, although economic considerations are a significant element of the public interest balancing for both new and existing projects, they are by no means the determinative consideration, and a finding of negative economic benefits would not preclude issuance of a license. Where our consideration and balancing of all public interest factors leads us to conclude that licensing a project is in the public interest, we would offer a license to the applicant, even if there appear to be negative economic benefits. The applicant must ultimately decide whether to accept the license and any financial risk that entails. Because the economic study proposed by the Friends of the Kinni is not needed for our analysis of the project or to develop license conditions (section 5.9(b)(5)), we do not recommend that the City of River Falls conduct an economic analysis of the costs of operation, maintenance, and benefits of the project.

¹⁶ See *Mead Corporation, Publishing Paper Division*, 72 FERC ¶ 61,027 (July 13, 1995). In most cases, electricity from hydropower would displace some form of fossil-fueled generation, in which fuel cost is the largest component of the cost of electricity production.

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