UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

Eagle Creek Hydro, LLC, Eagle Creek Water Resources, LLC, and Eagle Creek Land Resources, LLC	Project No. 9690-112 Project No. 10481-067 Project No. 10482-117

COMMENTS OF HOMEOWNERS ON TORONTO ON PROPOSED STUDY PLAN

Homeowners on Toronto, Inc. ("HOOT") submits these comments on the Proposed Study Plan ("PSP")[1] submitted in the above-captioned projects by Eagle Creek Hydro, LLC, Eagle Creek Water Resources, LLC, and Eagle Creek Land Resources, LLC (collectively, "Eagle Creek" or "Applicant"). The PSP proposes ten studies—an improvement on Eagle Creek's Pre-Application Document, which set a low bar by proposing to conduct *no* studies and instead urging stakeholders and the Commission to rely on studies that were conducted at the last relicensing thirty years ago. HOOT appreciates the PSP's adoption of some parts of HOOT's study request regarding Toronto Reservoir Recreation Needs and Impacts[2] in its proposed Recreation Facility Inventory, Recreation Use and Needs Assessment[3] and Reservoir Water Level Fluctuation/Operation Study.[4]

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[1] Eagle Creek Renewable Energy, LLC, Proposed Study Plan (Sept. 12, 2017), eLibrary No. 20170912-5144.

[2] Homeowners on Toronto, Inc., Comments on Pre-Application Document, Scoping Comments, and Study Requests at 18-19 (July 31, 2017), eLibrary No. 20170731-5187 ("July 2017 HOOT Comments and Study Requests").

[3] PSP at 70-95.

[4] *Id.* at 27-33.

The PSP, however, is still inadequate. As discussed below, Eagle Creek should be required to conduct the Socioeconomic Impacts study requested by HOOT. In addition, Eagle Creek should be directed to correct inappropriate limitations on scope and methodology, and to provide greater specificity, with respect to the studies it now proposes to perform.

A. Eagle Creek Should Perform the Socioeconomic Impacts Study Requested by HOOT

The PSP rejects several of the formal study requests that were submitted (PSP at 10-22), including HOOT's proposed Socioeconomic Impacts study (*id.* at 20-22). Eagle Creek should, at minimum, be directed to perform the Socioeconomic Impacts study requested by HOOT.

Eagle Creek's assertion that the Socioeconomic Impacts study fails to adequately meet the requirements of 18 C.F.R. § 5.9(b)(5)—i.e., to "[e]xplain any nexus between project operations and effects . . . on the resource to be studied, and how the study results would inform the development of license requirements"—is incorrect. As explained in the July 2017 HOOT Comments and Study Requests (at 20), "Toronto Reservoir elevation levels and fluctuations have a significant impact on the availability of recreation at the reservoir, which in turn affects the local economy and property tax base. Quantification of that impact will inform the Commission's decisionmaking with respect to both Toronto Reservoir operating regime and recreation-related license requirements." As further pointed out in the July 2017 HOOT Comments and Study Requests:

> Toronto Reservoir levels have a significant impact on the local economy . . . . HOOT members' anecdotal observations (as well as common sense) indicate that tourism is adversely affected by low water levels at Toronto Reservoir. "[A]rts, entertainment, and recreation

> and accommodation and food services" represent 10.3% of employment in Sullivan County. Increased recreational visits produced by enhanced reservoir access, facilities, and aesthetics could have significant impacts on this sector of the local economy.
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> In addition, the residential development in the vicinity of Toronto Reservoir provides a substantial share of the property tax revenues for the Town of Bethel. Reduced water levels in Toronto Reservoir have a significant adverse effect on nearby residents' quality of life, and thus, presumably, depress property values and new development near the reservoir, as well as local government property tax revenues.

Id. at 13-14 (footnotes omitted).

The Commission has previously recognized the existence of a nexus between reservoir levels and impacts on the local economy, property values, and tax revenues, on the same grounds as those noted in the July 2017 HOOT Comments and Study Requests. According to the Commission's Environmental Impact Statement ("EIS") for the relicensing of the Catawba-Wateree Hydroelectric Project:[5]

> Higher reservoir water levels year-round are more desirable to both visitors and residents resulting in more recreational use, visitor spending, income to local recreation-related businesses, recreation-related employment, and higher property values and tax revenues. On the other hand, lower reservoir levels would be associated with less recreation use, spending, income, employment, property value, and tax revenue.

[5] Final Environmental Impact Statement for Hydropower License at 380, Project No. 2232 (July 23, 2009), eLibrary No. 20090723-4001. *See also* Final Environmental Assessment for Hydropower License at 202, Project No. 2503-154 (Mar. 28, 2016), eLibrary No. 20160328-4002 ("Keowee-Toxaway EA"); Final Environmental Impact Statement for Hydropower Licenses at 233-34, Project Nos. 2197-073, 2206-030 (Apr. 18, 2008), eLibrary No. 20080418-4000 ("Yadkin EIS"). *See also* Request for Studies and Additional Information at A-1 (July 27, 2017), eLibrary No. 20170727-3011 ("Staff Study Requests") (project operations model should support an assessment of potential project effects on resources including land use).

Analyses of the types of socioeconomic impacts that HOOT has requested Eagle Creek to study have been conducted in other relicensing proceedings and used by the Commission to understand and evaluate project impacts. The EIS for the Yadkin Hydroelectric Project, for example, included: a multiple regression analysis that evaluated the effect of different reservoir level management scenarios on the price of nearby homes and the property tax revenues of local taxing districts;[6] survey-based estimates of the loss of business revenue associated with lower reservoir levels and reduced recreational use;[7] and an analysis of the economic effects of recreational spending changes from different reservoir levels, using the IMPLAN input-output impact assessment modeling system.[8] Similar studies have been performed in other relicensing proceedings.[9]

There are particularly compelling reasons to perform such analyses here. The Mongaup River Project reservoirs are in close proximity to large urban population centers and are heavily used for recreation. In addition, there is a significant amount of existing and potential future shoreline development at the Swinging Bridge Project, and the potential to significantly expand recreational use at Toronto Reservoir during any new

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[6] Yadkin EIS at 236-238.

[7] *Id.* at 234.

[8] *Id.* at 235.

[9] *See also* Keowee-Toxaway EA (methods used to examine socioeconomic impacts in that Environmental Assessment included: IMPLAN modeling of the economic impacts of recreational spending (Keowee-Toxaway EA at 202), and an evaluation of recent studies of the relationship between housing values and project reservoir levels (*id.* at 203-205)); Final Environmental Impact Statement for Hydropower License at 3-320 to 3-339, Project Nos. 2155-024, 2101-084 (Mar. 14, 2008), eLibrary No. 20080314-4000 ("Upper American River and Chili Bar EIS") (examining socioeconomic impacts of proposed construction, property value impacts of proximity to proposed power lines, etc.); Study Plan Determination for the Martin Dam Hydroelectric Project, Appendix A at 10-13, Project No. 349-150 (Apr. 17, 2009), eLibrary No. 20090417-3036 (describing approved socioeconomic study examining, *inter alia*, effects of reservoir elevations on property values).

license term.[10] Given all this, the Socioeconomic Impacts study requested by HOOT is crucial to helping build an adequate record for any Commission decision in this proceeding.

Eagle Creek cites four cases (PSP at 21) in support of its assertion that the Socioeconomic Impacts study (as well as other requested studies it rejected) fails to satisfy the nexus requirement for study requests; all four are inapposite. None of the cases involves the development of a Study Plan under the Integrated Licensing Process ("ILP")—the licensing process Eagle Creek chose for the Mongaup River Projects, which requires the license applicant to perform pre-application studies, but provides greater "pre-filing finality to the issue of what information gathering and studies will be required by the Commission to provide a sound evidentiary basis on which the Commission and other participants in the process can make recommendations and provide terms and conditions."[11] Indeed, three of the cases cited by Eagle Creek involve *post*-licensing studies ordered by the Commission as part of a license *issuance*, and whether the particular license conditions requiring such studies were (or would be) supported by the

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[10] *See* July 2017 HOOT Comments and Study Requests at 9-10 ("Since the turn of the century . . . tourism to Sullivan County has been making a recovery. Today, in addition to the existing community of nearly 1,000 homes near the reservoir, there are more than 100 homes on or very near the shoreline of Toronto Reservoir, with hundreds more as-yet-undeveloped lots in the Chapin Estate subdivision, and a 50-room resort hotel in the works.") (footnotes omitted).

[11] Hydroelectric Licensing Under the Federal Power Act, Order No. 2002, 68 Fed. Reg. 51,070, 51,078 (Aug. 25, 2003), FERC Stats. & Regs. ¶ 31,150, P 78 (2003), *clarified*, Order No. 2002–A, 69 Fed. Reg. 5268 (Feb. 4, 2004), 106 FERC ¶ 61,037 (2004).

evidentiary record of the underlying licensing proceeding.[12] Rather than justifying rejection of HOOT's Socioeconomic Impacts study request, the cases highlight the importance of ensuring that appropriate studies are performed in the relicensing process, so that the Commission has a sufficient record to develop and support the terms and conditions required in any new licenses issued to Eagle Creek.

For pre-application study requests, while the ILP requires that there be a "nexus" between project operations and effects on the resource to be studied,[13] the Commission has stated that "a common sense approach . . . informed by the professional judgment of qualified agency, Commission, and tribal staff, should ensure that this criterion is

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[12] In *City of Centralia v. FERC*, 213 F.3d 742, 748-50 (D.C. Cir. 2000) ("*Centralia*"), the Court held that the Commission could not impose a license condition that required the licensee to pay for a costly, potentially inconclusive post-licensing study to determine whether to construct a tailrace barrier, where the Commission's own studies had failed to uncover a problem that could be addressed by a tailrace barrier, a stakeholder's studies showed that there was no problem warranting a tailrace barrier, and the Commission's Environmental Assessment in support of license issuance had concluded that such a barrier was not justified. Likewise, *City of Jackson*, 105 FERC ¶ 61,136 (2003), involved not a pre-licensing study, but rather the licensee's post-licensing request to delete license conditions requiring a fish mortality study and compensatory mitigation. At the time the request for deletion was made, studies had already demonstrated no significant damage from hydro projects to fish populations in the relevant stretch of the Ohio River, and a decision on appeal (*City of New Martinsville v. FERC*, 102 F.3d 567 (D.C. Cir. 1996)) had held, with respect to two other projects on the same stretch of the Ohio River, and based on same fish studies, that there were no adverse project effects on fish resources, and thus no justification for requiring compensatory mitigation. The Commission accepted the request to delete the license conditions. *See also Allegheny Energy Supply Co., L.L.C.*, 109 FERC ¶ 61,028, P 9 (2004) (where "relevant studies on entrainment and turbine mortality have been conducted" and "there is no finding in this proceeding of significant adverse impacts to the fish population," neither a proposed license condition requiring compensatory mitigation payments for fish mortality, nor an alternative request that licensee be required to conduct additional post-licensing studies, should be included in license).

The fourth case, *FPL Energy Maine Hydro, LLC*, 95 FERC ¶ 61,016, at 61,031 n.15 (2001) (mis-cited in PSP (at 11, 21) as 95 FERC ¶ 61,106), cites *Centralia* for the general proposition that FERC is not obligated to require the license applicant to collect or provide evidence that might support future recommendations of resource agencies. That decision, however, pre-dated the creation of the ILP; and in adopting the ILP, the Commission expressly decided that although "the Commission has no statutory obligation to provide a record to support other agencies' decision making, or to require studies that it does not deem necessary to evaluate the public interest in light of the record evidence and argument provided by other parties," Order No. 2002, P 92, under the ILP, "judgment calls on study requests will be made 'in light of the principle that the integrated licensing process should to the extent reasonably possible serve to establish an evidentiary record upon which the Commission and all agencies or Indian tribes with mandatory conditioning authority can carry out their responsibilities.'" *Id.*

[13] 18 C.F.R. § 5.9(b)(5).

reasonably applied."[14] Commission Staff has also made clear that it does not expect members of the public to identify or recommend specific, scientifically valid methodologies to conduct the studies they request as part of the ILP.[15]

The applicable standards for study requests are met with respect to the Socioeconomic Impacts study HOOT requested. Eagle Creek should be directed to perform it.

B. Eagle Creek Should Be Required to Correct Deficiencies in the Studies It Now Proposes to Perform

Although Eagle Creek now proposes to perform some studies in connection with its relicensing application, several of them are inappropriately limited or inadequately specified. Eagle Creek should be required to correct those deficiencies.

1. Reservoir Water Level Fluctuation/Operation Model Study

The proposed Reservoir Water Level Fluctuation/Operation Model Study could provide valuable information regarding the effects of different project operating protocols on Toronto Reservoir resources. Eagle Creek, however, made clear at the October 4 PSP meeting that it intends to study only the operating scenarios that it selects. In response to questions from a HOOT member who attended that meeting, Eagle Creek indicated that it does not contemplate allowing stakeholders to propose additional scenarios, nor has it committed to provide stakeholders with access to the model.

If Eagle Creek can cherry-pick the operating scenarios that it studies, the resulting data may be inadequate to allow members of the public, the resource agencies, and the

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[14] Order No. 2002, P 98.

[15] *See* Transcript of 7p Scoping Meeting in Monticello, New York at 48 (Aug. 3, 2017), eLibrary No. 20170803-4004.

Commission to evaluate the Applicant's license application. To ensure that the Commission has the information it needs to understand the effects of different operating regimes on power supply, recreation, land use, aesthetics, aquatic habitat, and other beneficial public uses, Eagle Creek should be required to use its Reservoir Water Level Fluctuation/Operation Model Study to evaluate a broad range of operating scenarios, including, without limitation, run-of-river operation for the Toronto Reservoir, as well as the operating protocol that HOOT proposed in its July 2017 Comments and Study Requests: i.e., maintenance of Toronto Reservoir water level at 1,218 msl, plus or minus 2 feet, during the recreation season; and at 1,215 msl, plus or minus 5 feet, year-round.

2. Aquatic Habitat Survey and Assessment

The Applicant's proposed Aquatic Habitat Survey and Assessment is also deficient. Eagle Creek proposes a single set of field surveys following Labor Day in 2018 "as hydrology and operations allow," and it proposes not to draw down the reservoirs for this study.[16] This methodology will not provide the information that the Commission needs to evaluate Eagle Creek's licensing proposal.

As Staff explained, conditions at full-pool must be studied to establish a baseline condition and the health of the aquatic habitat within the project reservoirs.[17] During the period 2010-2016, however, Toronto Reservoir has never been at full-pool following Labor Day, and in one year the elevation of the reservoir was only 1,200 msl at the end of

[16] PSP at 39.

[17] *See, e.g.*, Staff Study Requests at A-4 to A-6.

August—i.e., twenty feet below full-pool.[18] Studying Toronto Reservoir habitat in September 2018 "[a]s conditions allow" (PSP at 39), without specifying that the reservoir be at full-pool at the time of the field survey, will therefore likely produce an inaccurate baseline picture of aquatic habitat in that reservoir.

Eagle Creek also proposes *not* to draw down each reservoir for purposes of the Aquatic Habitat Survey and Assessment. As a general matter, HOOT members of course prefer that high reservoir levels be maintained at Toronto Reservoir, particularly during the recreation season. But Eagle Creek must study the effects of any reservoir levels it intends to propose in its license application, including the "lower target elevation"[19] it intends to propose for Toronto Reservoir.[20] Eagle Creek has previously identified extreme drawdowns as within "normal" Toronto Reservoir operations—up to 50 feet below full-pool, more than four times the average maximum drawdown of the other Mongaup River Project reservoirs.[21] If Eagle Creek intends to propose a similar range in this relicensing proceeding, then studying only a narrow range of reservoir elevations will not provide an accurate picture of the impacts of that proposal.

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[18] *See* USGS data included in Attachment A of July 2017 HOOT Comments and Study Requests. Notwithstanding a 2009 commitment by the licensee to use its "best efforts" to achieve a "target reservoir elevation" of 1,215 msl, plus or minus 5 feet, from Memorial Day to Labor Day, even that relaxed standard has been met in less than half the recreation seasons since the commitment was made. At the end of August 2012, for example, the elevation of Toronto Reservoir was only 1,200 msl; at the end of August 2010, it was 1,208.6 msl. HOOT July 2017 Comments and Study Requests, Att. A at A-5, A-7.

[19] PSP at 39.

[20] Accordingly, if Eagle Creek intends to propose that the Commission grant it a new license with a "lower target elevation" for Toronto Reservoir identical to the low-end of its current target reservoir elevations (i.e., 1,170 msl (*id.* at 30); *see also* Eagle Creek Renewable Energy, LLC, Study Scoping Supplemental Information at 9, 14 (Dec. 1, 2017), eLibrary No. 20171201-5213), Eagle Creek should be required to adequately study the impacts of such operations.

[21] Eagle Creek Renewable Energy, LLC, Pre-Application Document, Appendix D at 9-11 (Mar. 30, 2017), eLibrary No. 20170330-5442.

Accordingly, Eagle Creek should: (1) specify that its Aquatic Habitat Survey and Assessment will be performed for each reservoir at full-pool; and (2) provide for field surveys and desktop analysis of the fluctuation zone it intends to propose in its license application by conducting such studies when the reservoirs have been drawn down to such levels. Eagle Creek has previously informed HOOT members and others that it intends to draw down Toronto Reservoir to make repairs to the gate tower.[22] Such a drawdown would appear to provide an opportunity to perform needed studies of lower reservoir elevations without requiring a separate drawdown especially for the purposes of this relicensing study.

3. Special-Status Wildlife Species and Habitat Assessment and Special-Status Plant Species and Noxious Weed Assessment

Eagle Creek proposes to address "Special-Status Wildlife Species and Habitat Assessment" and "Special-Status Plant Species and Noxious Weed Assessment" only as part of its proposed Aquatic Habitat Mapping Study. PSP at 24, 34-35, 41. At the PSP meeting, Eagle Creek clarified that it intends only to keep an eye out for terrestrial plants and non-aquatic wildlife while conducting the proposed Aquatic Habitat Mapping Study; it does not propose to conduct any kind of systematic survey of such resources.

This proposal is inadequate. Special-status species are, by definition, rare. Eagle Creek's proposed methodology—to rely on the casual observations of personnel in the field to study aquatic habitat—is unlikely to yield reliable data about special-status terrestrial wildlife and plants. Eagle Creek's proposal does not ensure that all habitats

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[22] *See, e.g.*, Transcript of 9a Scoping Meeting in Monticello, New York at 67 (Aug. 4, 2017), eLibrary No. 20170804-3002.

with the potential to support special-status terrestrial species are surveyed; that the personnel keeping a look-out for such species have the necessary expertise and familiarity with native terrestrial wildlife and plants; or that those conducting the Aquatic Habitat Mapping Study also have experience with analyzing hydroelectric project impacts on terrestrial species.

It is also unclear whether the proposed timing of the Aquatic Habitat Mapping Study is consistent with the needs of a terrestrial species survey. Eagle Creek does not propose to study aquatic habitat in winter.[23] As Staff observed, however, the New York State Department of Environmental Conservation ("NYSDEC") has indicated that bald eagles use all five project reservoirs in the winter,[24] and there may well be other special-status species that do so. Particularly given that the reservoirs' maximum drawdown is generally in the winter, it is important to understand the impacts of project operating protocols on special-status species that may be present—and potentially at their most vulnerable—during that season.

4. Recreational Use

Eagle Creek's draft recreational user survey (PSP at 91-95) is inadequate to capture the effects of reservoir levels on recreational use. The PSP improperly rejects the National Park Service's request that Eagle Creek survey individuals who do not currently use the projects for recreation (*id.* at 81). This creates significant sample bias—only those willing to recreate at the reservoir at then-current water levels will answer the

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[23] PSP at 41 ("[a]quatic habitat field surveying will occur in the summer and fall of 2018").

[24] Staff Study Requests at A-17; *see also* NYSDEC, Comments on Pre-Application Document, and Scoping Document 1 Study Request for the Mongaup River Projects at 16-17 (July 28, 2017), eLibrary No. 20170728-5213.

survey. As suggested by some agencies at the PSP meeting, Eagle Creek should survey by mail using zip codes to reach everyone within a particular radius; and it should consider development and use of an online survey in order to maximize responses.[25] In addition, the Applicant's proposal only to conduct spot counts and survey recreational users between April and October of a single study season[26] will provide an incomplete picture of recreational use.

The proposed draft survey instrument also fails to ask the right questions. For example, instead of, or in addition to, asking users whether they had noticed reservoir fluctuations "today,"[27] the survey should ask about fluctuations over time, since water levels changing over the course of a single day have far less impact on recreational use levels than do unpredictable or consistently low reservoir levels.[28] Additional issues that should be covered in the survey include:

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[25] These approaches have been used in other relicensings in recent years. *See, e.g.*, FERC, Staff Comments on the Proposed Study Plan for the County Line Road Hydroelectric Project at A-2, Project No. 14513-001 (Dec. 10, 2015), eLibrary No. 20151210-3018; FERC, Study Plan Determination for the County Line Road Hydroelectric Project at B-37, Project No. 14513-001 (Mar. 2, 2016), eLibrary No. 20160302-3031; Bear Swamp Power Co., Bear Swamp Project, Revised Study Plan § 9.6.3.2, Project No. 2669-085 (Sept. 30, 2015), eLibrary No. 20150930-5205 (approved by FERC, Study Plan Determination for the Bear Swamp Project, Project No. 2669-085 (Oct. 30, 2015), eLibrary No. 20151030-3023).

[26] PSP at 78.

[27] *Id.* at 94.

[28] Based on HOOT members' observations, water levels this fall have been higher than in many recent autumns. The licensee ordinarily draws Toronto Reservoir down by several feet by this time of year; this year, it has not done so, and HOOT members estimate that water levels are roughly 10 feet above where they were at this time last year (*see* Water Year Summary for Toronto Reservoir, Water Year 2017, USGS, https://waterdata.usgs.gov/nwis/wys_rpt?wys_water_yr=2006&site_no=01433100&agency_cd=USGS&ad (Use "Select a water year" drop down box to navigate to water year 2017, and click box for "62614 Elevation, lake/res, (Ins.)" for "Available Parameters," and click "Go."), a copy of which is attached hereto). HOOT members' observations also indicate that Toronto Reservoir is being used more heavily than it has ever been at this time of year, to their knowledge; for example, each weekend morning, several boats are launched from the Moscoe Road public access point. It is possible that some of the unusually high usage is due to the somewhat warmer-than-average temperatures this year; a valid survey instrument, administered at various times of year for more than one year, would help tease apart the effects of these variables.

- Whether and how low or unpredictable reservoir levels have affected the survey respondent's decisions regarding whether, when, and how to recreate at Toronto Reservoir;

- Whether the survey respondent has had, during the current or prior recreational seasons, difficulty launching or removing boats, including but not limited to getting stuck in the mud at the launch site, due to low reservoir levels; and

- Whether and to what extent the survey respondent has noticed an impact of reservoir levels on project aesthetics.

The PSP states that Eagle Creek will develop a future recreational demand estimate "by analyzing prior and current Project use data; trend data from state, regional, and national resources, as applicable; and population growth data, as applicable."[29] *Id.* at 80. It is unclear from that description, however, whether the methodology could reasonably estimate what future recreational use would be if the elevation of Toronto Reservoir were consistently maintained at a level appropriate for recreation. Simple descriptive statistics and linear projections based on existing levels of recreational use are unlikely to be adequate, particularly given the sampling bias and survey design issues discussed above. Eagle Creek's PSP, however, does not indicate whether it plans to undertake the more sophisticated modeling needed to develop a future demand estimate that reflects both current use and unmet demand. Eagle Creek should provide more detail on its proposed analysis of future demand, so that the Commission and stakeholders can assess the adequacy of the proposed Recreation Use and Needs Assessment.

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[29] It is unclear whether Eagle Creek intends to use "population growth data" for Sullivan County, New York State, or the United States. And it is doubtful that the draft future recreational demand assessment would capture the increased recreation demand resulting from increased tourism to the region, including demand related to the planned hotel on Toronto Reservoir (*see supra* note 10) and Resorts World Catskills, a hotel and casino under construction near Monticello that is slated to open in 2018 (Resorts World Catskills, Property, https://rwcatskills.com/property.html (last visited Dec. 5, 2017)).

5. Shoreline Management Assessment Study

The proposed Shoreline Management Assessment Study would collect information from residential shoreline property owners regarding reservoir shoreline management, private recreation use of the reservoir, and reservoir levels. PSP at 107-117. HOOT appreciates Eagle Creek's proposal to consult with HOOT representatives and others regarding the most effective way to distribute the questionnaire. *Id.* at 110.

The draft survey instrument itself, however, suffers from some of the same problems as the proposed recreational use survey. It asks only for information on recreational use under the reservoir's current operating regime; it does not ask questions designed to elicit information on unmet demand. The draft question on the number of boats "typically docked at your dock" (*id.* at 114), for example, will significantly underestimate demand for boat access at Toronto Reservoir. First, there have been recreational seasons during which reservoir levels have been too low, at times, for any boats to be safely docked at many homeowners' docks, causing early removal of boats. The question should therefore be clarified to ask about the number of boats typically docked during a specified recreational season. Second, current boat ownership levels are driven in part by the licensee's historical reservoir operations. Homeowners are less likely to invest in a boat if reservoir levels may be too low to safely enjoy it during some years. The unpredictable—and frequently low—elevation of Toronto Reservoir may well have discouraged some homeowners from investing in boats. Other survey questions, which focus exclusively on recreational usage under the current reservoir operations regime, suffer from similar defects.

The survey should be supplemented with questions to address recreation issues including:

- Whether and how low or unpredictable reservoir levels have affected the decisions of the residential property owner's household members regarding whether, when, and how to recreate at Toronto Reservoir;
- Whether and to what extent the residential property owner has noticed an impact of reservoir levels on project aesthetics;
- Whether and how low or unpredictable reservoir levels have affected the residential property owner's decision whether to acquire a boat;
- Whether reservoir fluctuations have required the residential property owner to remove a boat from the reservoir prematurely or unexpectedly, or required the residential property owner to delay putting a boat back into the reservoir;[30] and
- If the residential property owner uses a boat, whether there have been occasions upon which the property owner's dock length has been inadequate due to low reservoir levels, and whether the homeowner has had to lengthen a dock, or use heavy equipment to move a dock, during the recreational season, due to low reservoir levels.

In addition, while the draft survey asks for respondents' impressions of Eagle Creek's "shoreline management practices,"[31] it fails to identify the specific areas covered by those practices, and many respondents may be unaware of the extent of Eagle Creek's shoreline management criteria and responsibilities. Therefore, to the extent the questionnaire seeks responses regarding Eagle Creek's existing shoreline management practices, those questions should clearly describe the particular substantive criterion the survey respondent is being asked to evaluate (e.g., Eagle Creek's implementation of a specific vegetation management requirement, erosion prevention measure, or guideline for structures within the water and on land, etc.). Any such questions should also clarify

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[30] Boats are generally removed from the reservoir for the winter to prevent ice damage.

[31] PSP at 116, Question 19.

whether the respondent is being asked to evaluate the appropriateness of the criterion, as opposed to Eagle Creek's practices and performance in implementing the criterion.

The proposed survey of shoreline residential property owners provides an opportunity to collect information on the relationship of recreational use and aesthetics to reservoir elevation levels over time. In contrast to users responding to a spot survey at a designated public recreation site—some of whom may have visited the project reservoir only once or a few times—a high percentage of the owners of property abutting the project reservoirs have lived there for years and have therefore experienced a wide range of reservoir water elevation levels in all seasons.[32] The proposed survey for abutting shoreline property owners should be supplemented to better capture their insights about the relationship of water levels to recreation and aesthetics.[33]

CONCLUSION

Eagle Creek's Proposed Study Plan, while an improvement over its Pre-Application Document proposal to conduct no studies, is inadequate and should be modified and supplemented as discussed above. This relicensing proceeding is a once-in-a-generation opportunity to establish the terms and conditions that will govern the operation of the Mongaup River Projects. It therefore is vital that Eagle Creek's Study Plan provide for appropriate rigorous studies, with sufficiently specific methodologies

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[32] Indeed, the proposed survey could elicit information about recreational use of the reservoirs in winter, and about particular winter recreation activities such as snowshoeing and cross-country skiing, without appreciably increasing the cost of the survey.

[33] The current draft survey includes a single question (*id.* at 116, Question 20) that asks respondents, "how satisfied are you with the reservoir water levels on the reservoir adjacent to your property." The question is not tied to any particular time period or reservoir elevation level. It would therefore be unclear to survey respondents whether the question asks only about reservoir elevation at the time the survey is administered, or reservoir elevation over some longer historical period.

and metrics to allow the Commission and stakeholders to assess the impacts of continued operation of the projects, as well as alternative operating scenarios.

Respectfully submitted,

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USGS DATA FOR TORONTO RESERVOIR, WATER YEAR 2017

USGS Water-Year Summary 2017

01433100 TORONTO RESERVOIR NEAR BLACK LAKE, NY

LOCATION - Lat 41°37'15", long 74°49'55" referenced to North American Datum of 1927, Sullivan County, NY, Hydrologic Unit 02040104, at dam on Black Lake Creek, and 2.5 mi southeast of village of Black Lake.
DRAINAGE AREA - 22.9 mi².

SURFACE-WATER RECORDS

PERIOD OF RECORD - January 1926 to September 2013 (month-end elevations and contents). October 2013 to current year (daily observation elevations).

REVISED RECORDS - WSP 1552: 1951-54. WSP 1702: 1959 (M). WDR NY-85-1: 1984. WDR NY-86-1: 1985. WDR NY-90-1: Drainage area.

GAGE - Nonrecording gage read daily. Datum of gage is NGVD of 1929 (levels by Orange and Rockland Utilities, Inc.).

COOPERATION - Elevation record and capacity table (1952) provided by Alliance Energy New York.

REMARKS - Reservoir is formed by an earthfill dam completed July 24, 1926. Storage began Jan. 13, 1926. Usable capacity, 1,098.2 mil ft³ between elevations 1,165.0 ft, minimum operating pool, and 1,220.0 ft, top of permanent flashboards. Capacity below elevation 1,165.0 ft, minimum operating pool, about 26.8 mil ft³. Figures given herein represent usable contents above 1,165.0 ft. Reservoir is used for storage of water for power.

Capacity table (elevation, in feet, and usable contents, in millions of cubic feet)

Elevation	Contents	Elevation	Contents
1,165.0	0.0	1,205.0	644.5
1,175.0	68.7	1,215.0	929.2
1,185.0	211.4	1,220.0	1,098.2
1,195.0	400.0	1,222.5	1,190.2

EXTREMES FOR PERIOD OF RECORD - Maximum contents observed, 1,186.4 mil ft³, Apr. 4, 2005, elevation, 1,222.4 ft; minimum contents observed (after first filling), about -26.8 mil ft³, Nov. 15, 1928, elevation, 1,144.5 ft.

U.S. Department of the Interior
U.S. Geological Survey

Suggested citation: U.S. Geological Survey, 2017, National Water Information System data available on the World Wide Web
(USGS Water Data for the Nation), accessed [December 5, 2017],
at URL //nwis.waterdata.usgs.gov/nwis/wys_rpt?dv_ts_ids=&105370&adr_begin_date=2016-10-01&adr_end_date=2017-09-30&site_no=01433100&agency_cd=USGS

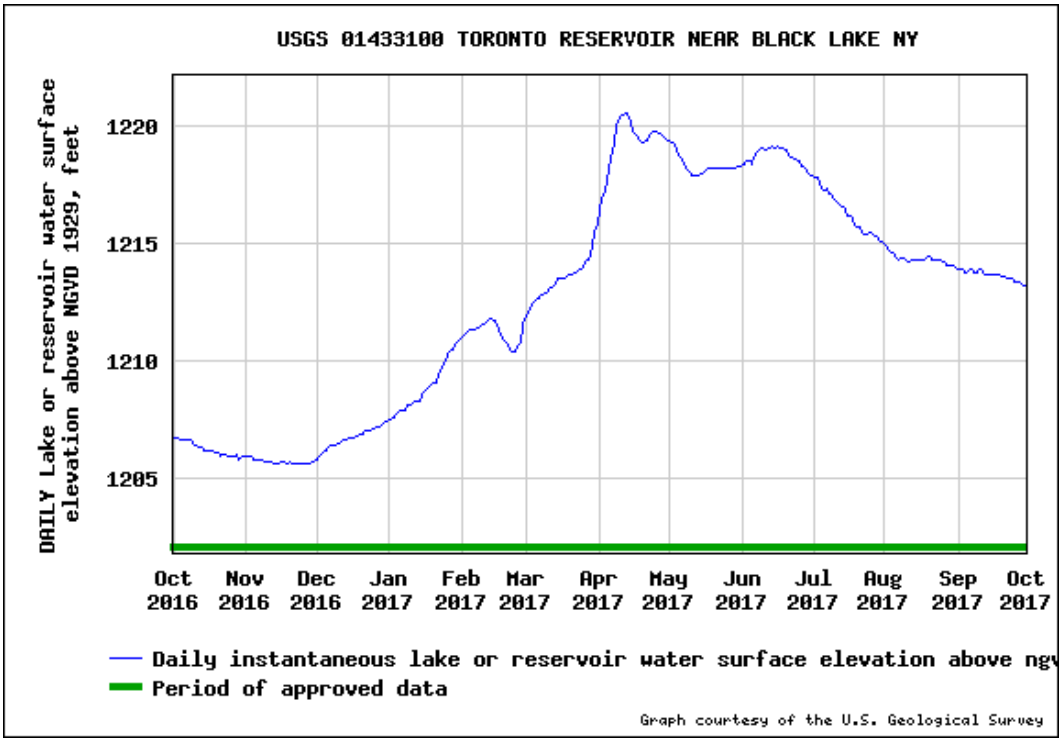
Water-Data Report 2017

01433100 TORONTO RESERVOIR NEAR BLACK LAKE, NY -- Continued

LAKE OR RESERVOIR WATER SURFACE ELEVATION ABOVE NGVD 1929, FEET
YEAR 2016-10-01 to 2017-09-30
DAILY INSTANTANEOUS VALUES

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul
	2016	2016	2016	2017	2017	2017	2017	2017	2017	2017
1	1,206.70	1,205.90	1,205.80	1,207.50	1,211.00	1,211.90	1,216.40	1,219.40	1,218.40	1,217.90
2	1,206.70	1,205.90	1,205.90	1,207.50	1,211.10	1,212.20	1,216.90	1,219.30	1,218.40	1,217.80
3	1,206.70	1,205.90	1,206.00	1,207.60	1,211.20	1,212.40	1,217.30	1,219.20	1,218.50	1,217.80
4	1,206.60	1,205.80	1,206.10	1,207.70	1,211.30	1,212.50	1,217.70	1,219.00	1,218.50	1,217.60
5	1,206.60	1,205.80	1,206.20	1,207.80	1,211.30	1,212.70	1,218.20	1,218.80	1,218.40	1,217.40
6	1,206.60	1,205.80	1,206.30	1,207.90	1,211.30	1,212.70	1,218.60	1,218.60	1,218.70	1,217.30
7	1,206.60	1,205.80	1,206.40	1,207.90	1,211.30	1,212.80	1,219.30	1,218.40	1,218.90	1,217.40
8	1,206.60	1,205.80	1,206.40	1,207.90	1,211.40	1,212.80	1,220.00	1,218.20	1,219.00	1,217.10
9	1,206.50	1,205.70	1,206.40	1,208.10	1,211.50	1,212.90	1,220.20	1,218.10	1,219.10	1,217.10
10	1,206.40	1,205.70	1,206.50	1,208.10	1,211.60	1,213.00	1,220.40	1,217.90	1,219.10	1,216.90
11	1,206.40	1,205.70	1,206.50	1,208.20	1,211.60	1,213.10	1,220.50	1,217.90	1,219.00	1,216.80
12	1,206.30	1,205.70	1,206.60	1,208.30	1,211.70	1,213.10	1,220.60	1,217.90	1,219.10	1,216.70
13	1,206.30	1,205.60	1,206.60	1,208.30	1,211.80	1,213.30	1,220.60	1,217.90	1,219.10	1,216.60
14	1,206.20	1,205.60	1,206.60	1,208.30	1,211.80	1,213.50	1,220.20	1,218.00	1,219.20	1,216.60
15	1,206.20	1,205.60	1,206.70	1,208.50	1,211.70	1,213.50	1,219.80	1,218.00	1,219.10	1,216.40
16	1,206.20	1,205.70	1,206.70	1,208.70	1,211.50	1,213.50	1,219.70	1,218.10	1,219.20	1,216.20
17	1,206.20	1,205.70	1,206.70	1,208.80	1,211.30	1,213.50	1,219.60	1,218.20	1,219.10	1,216.20
18	1,206.20	1,205.60	1,206.80	1,208.90	1,211.10	1,213.60	1,219.40	1,218.20	1,219.10	1,216.00
19	1,206.10	1,205.60	1,206.80	1,209.00	1,210.90	1,213.70	1,219.30	1,218.20	1,219.00	1,215.80
20	1,206.10	1,205.70	1,206.90	1,209.10	1,210.80	1,213.70	1,219.30	1,218.20	1,219.00	1,215.70
21	1,205.90	1,205.60	1,206.90	1,209.10	1,210.60	1,213.80	1,219.40	1,218.20	1,218.80	1,215.70
22	1,206.00	1,205.60	1,207.00	1,209.40	1,210.50	1,213.80	1,219.60	1,218.20	1,218.70	1,215.50
23	1,206.00	1,205.60	1,207.00	1,209.50	1,210.40	1,213.90	1,219.70	1,218.20	1,218.60	1,215.40
24	1,205.90	1,205.60	1,207.00	1,209.80	1,210.40	1,213.90	1,219.80	1,218.20	1,218.60	1,215.40
25	1,205.90	1,205.60	1,207.10	1,210.00	1,210.60	1,214.00	1,219.80	1,218.20	1,218.50	1,215.50
26	1,205.90	1,205.60	1,207.10	1,210.20	1,210.80	1,214.20	1,219.70	1,218.20	1,218.30	1,215.50
27	1,205.90	1,205.60	1,207.20	1,210.40	1,211.50	1,214.30	1,219.70	1,218.20	1,218.30	1,215.40
28	1,206.00	1,205.60	1,207.20	1,210.50	1,211.80	1,214.50	1,219.60	1,218.20	1,218.20	1,215.30
29	1,205.80	1,205.70	1,207.30	1,210.70		1,214.90	1,219.50	1,218.20	1,218.00	1,215.20
30	1,205.90	1,205.70	1,207.40	1,210.80		1,215.50	1,219.40	1,218.30	1,217.90	1,215.10
31	1,205.90		1,207.40	1,210.90		1,215.90		1,218.30		1,215.10
Mean	1,206.24	1,205.69	1,206.69	1,208.88	1,211.21	1,213.52	1,219.34	1,218.32	1,218.73	1,216.34
Max	1206.70	1205.90	1207.40	1210.90	1211.80	1215.90	1220.60	1219.40	1219.20	1217.90
Min	1205.80	1205.60	1205.80	1207.50	1210.40	1211.90	1216.40	1217.90	1217.90	1215.10

Day	Aug	Sep
	2017	2017
1	1,214.90	1,213.90
2	1,214.80	1,213.90
3	1,214.70	1,213.90
4	1,214.60	1,213.80
5	1,214.50	1,213.80
6	1,214.40	1,213.90
7	1,214.30	1,213.90
8	1,214.40	1,213.80
9	1,214.40	1,213.80
10	1,214.30	1,213.90
11	1,214.20	1,213.90
12	1,214.30	1,213.80
13	1,214.30	1,213.70
14	1,214.30	1,213.70
15	1,214.30	1,213.70
16	1,214.30	1,213.70
17	1,214.30	1,213.70
18	1,214.30	1,213.70
19	1,214.50	1,213.70
20	1,214.50	1,213.60
21	1,214.30	1,213.60
22	1,214.30	1,213.50
23	1,214.30	1,213.50
24	1,214.30	1,213.50
25	1,214.30	1,213.40
26	1,214.20	1,213.40
27	1,214.10	1,213.40
28	1,214.10	1,213.30
29	1,214.10	1,213.20
30	1,214.10	1,213.20
31	1,214.00	
Mean	1,214.35	1,213.66
Max	1214.90	1213.90
Min	1214.00	1213.20


USGS 01433100 TORONTO RESERVOIR NEAR BLACK LAKE NY
DAILY Lake or reservoir water surface elevation above NGVD 1929, feet
1220
1215
1210
1205
Oct 2016
Nov 2016
Dec 2016
Jan 2017
Feb 2017
Mar 2017
Apr 2017
May 2017
Jun 2017
Jul 2017
Aug 2017
Sep 2017
Oct 2017
Daily instantaneous lake or reservoir water surface elevation above ngv
Period of approved data
Graph courtesy of the U.S. Geological Survey

CERTIFICATE OF SERVICE

CERTIFICATE OF SERVICE

I hereby certify that I have this day caused the foregoing document to be served upon each person designated on the official service list compiled by the Secretary in this proceeding.

Dated on this 11th day of December, 2017.

/s/ *Rebecca J. Baldwin*
Rebecca J. Baldwin

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United States Department of the Interior

FISH AND WILDLIFE SERVICE
3817 Luker Road
Cortland, NY 13045

December 11, 2017

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

RE: Rio Hydroelectric Project (FERC No. P-9690-112)
Mongaup Falls Hydroelectric Project (FERC No. P-10481-067)
Swinging Bridge Hydroelectric Project (FERC No. P-10482-117)
Comments on Proposed Study Plan

Dear Ms. Bose:

The U.S. Fish and Wildlife Service (Service) has reviewed the September 12, 2017, *Proposed Study Plan* (PSP) submitted by Eagle Creek Hydro Power, LLC, Eagle Creek Water Resources, LLC, and Eagle Creek Land Resources, LLC, collectively referred to as Eagle Creek Hydro (Applicant) for the Rio (FERC No. 9690-112), Mongaup Falls (FERC No. 10481-067), and Swinging Bridge Hydroelectric Projects (FERC No. 10482-117). The three projects, collectively known as the Mongaup River Hydroelectric Projects (Project or Projects), are located on the Mongaup River in Sullivan and Orange Counties, New York. The Service attended the October 4, 2017, public study scoping meeting as well as an informal study planning meeting on November 9, 2017, with the Federal Energy Regulatory Commission (FERC) and the New York State Department of Environmental Conservation (NYSDEC), the presentations of which were largely filed by the Applicant with the FERC in the November 29, 2017, *Study Scoping Supplement Information* document (Supplement). We have reviewed the Supplement and have incorporated this information into our comments below.

I. General Comments

The Service provided our comments on the Pre-Application Document (PAD) and requested studies in our July 26, 2017, letter to the Applicant as filed with the FERC. The PSP did not fully incorporate our requested studies.

Several of the proposed study requests were aggregated into a single study within the PSP. We recommend that the Applicant structure the Revised Study Plan (RSP) according to the study

requests of the stakeholders as they were submitted. These requests follow the study criteria required in 18 CFR §5.9(b) and have goals/objectives, nexuses, methodologies, etc., that stand alone as studies and become difficult to evaluate when combined as the Applicant has done.

We will address the studies proposed by the Applicant in relation to our original requests and indicate where we feel additional data collection is necessary based on the existing data provided by the Applicant and the proposed studies and methodology.

The Applicant frequently references the robust nature of the prior studies conducted in the 1980s and early 1990s in pursuit of the original license for the Projects as a justification for not conducting or limiting the scope of studies during the current relicensing. We agree that for datasets that adequately address the goals and objectives (as required in 18 CFR §5.9(b)) of the study requests submitted by the stakeholders, existing data can be utilized for these purposes. However, the majority of the existing data were collected prior to the implementation of notable operational changes required during the original licensing in 1992 and subsequently throughout the current license (e.g., minimum flows, impoundment level restrictions, decommissioning, and installation of powerhouses). Judicial precedent holds that each relicensing is a new opportunity to rebalance the resources at hand (Yakima Indian Nation v. FERC, 746 F.2d 466(9th Cir. 1984)). We view this relicensing as a significant opportunity to evaluate the current condition of the resources and potential impacts from the Projects *with the benefit of comparison to* baseline data collected in the 1980s and 1990s during the original licensing. We recommend that the Applicant collect additional data that are comparable to the existing data collected in the original licensing in order to facilitate analyses of changes due to the original licensing and over time in order to best inform future license conditions at the Projects.

The Applicant has stated that the FERC cannot require a study without a detailed methodology and estimate of effort and cost. We disagree with this determination by the Applicant in that the clear language of 18 CFR §5.9(b) indicates that a study request must contain an explanation of "how *any proposed* study methodology… is consistent with generally accepted practice…" and "*considerations* of level of effort and costs, *as applicable*…." [emphasis added]. It is clear that a detailed methodology and estimate of effort and cost are not required within a study request, but are helpful to FERC to determine the scope and feasibility of a requested study. Our requests included proposed study methodologies (i.e., "preferred data collection and analysis techniques, or objectively quantified information, and a schedule including appropriate field season(s) and the duration") noted as consistent with methodologies required in most FERC relicensings in New York and an assessment of their relative cost and level of effort, which fully address the requirements of the FERC in 18 CFR §5.9(b).

II. Specific Comments by Study

A. Swinging Bridge Spillway Habitat Study

The Applicant did not include this study in the PSP based on an opinion that this study is designed to evaluate a Protection, Mitigation, and Enhancement (PME) measure prior to determining if such a measure is warranted. The Applicant also cites a lack of Project nexus.

While we disagree that there is no nexus to project operations, we are willing to defer this request to PME discussions.

B. Bald Eagle Population and Winter Foraging Study

The Service will be evaluating potential impacts to the bald eagle population at the Projects and the need for fish protection and passage measures that may be prescribed under our Section 18 authority. The existing bald eagle nesting data has not been updated since 2010, and there has apparently never been a thorough survey of the winter breeding population at the Projects. The Applicant did not include a bald eagle (*Haliaeetus leucocephalus*) study in the PSP based on an opinion that the existing data are sufficient and that the study lacks a Project nexus based largely on their position that efforts conducted during the original relicensing preclude the need for additional study (addressed above). The Service disagrees with these opinions and these issues were largely addressed in our initial study request. In order to clarify the requested study, address updated information in the Supplement, and request additional data needed based on our continued review of the existing data, we have updated our bald eagle population and winter foraging study request below. We recommend that the Applicant incorporate a bald eagle population and winter foraging study in the RSP.

1. *Goals and Objectives*

The goals of this study are to: 1) assess the current status and distribution of the bald eagle population in the vicinity of the Projects; 2) provide detailed information regarding the winter foraging and feeding activities of bald eagles at the Projects; and 3) determine the current forage base for bald eagles provided by entrainment of fish through the Projects during the winter months. The specific objectives of this study are to: 1) provide a map and updated status of all active and inactive bald eagle nest locations at the Projects; 2) provide maps of winter population and foraging areas and an estimate of the winter population of bald eagles at the Projects; 3) provide a detailed table of counts of bald eagle foraging activity by forage species/size by location and a figure of foraging activity for areas below each powerhouse in relation to generation at the Projects; 4) provide an analysis of the relationship of the observed winter forage activity in the context of the fish entrained through the Projects and Project operations; and 5) if requested by the Service, provide a detailed table of the current number of individuals of fish species by size entrained through the Projects in the winter months.

2. *Resource Management Goals*

Bald eagles are a federally protected species and managed by the Service under the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668c) and the Migratory Bird Treaty Act of 1918, as amended (16 U.S.C. §§ 703 et seq.). The Service is responsible for regulating any potential 'take'[1] of eagles under these regulations and manages the eagle populations in all eagle

[1] 'Take' is defined as "to pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb". 'Disturb' is defined as "to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, 1) injury to an eagle, 2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or 3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior."

management units in the United States to be stable or increasing from 2009 levels and to maintain the persistence of local populations throughout the range for the next 100 years[2].

The Mongaup Valley is managed by the NYSDEC to protect both nesting and wintering habitat for a notable bald eagle population. Winter recreation at the Projects is known to be linked to viewing platforms provided by the NYSDEC for observation of bald eagles at the Mongaup Falls and Rio Projects.

3. *Public Interest*

The requestor is a resource agency.

4. *Existing Information*

The PAD provides some general information on bald eagles, but there is no site-specific information on nesting locations or winter activity presented. The Supplement indicates that there may be nesting and roosting data available from the NYSDEC and the Delaware Highlands Conservancy (DHC), but this information is not provided.

The Supplement also provides winter population estimates by the NYSDEC and DHC. The NYSDEC winter bald eagle counts in the Mongaup River System extend from 1978-2010 and show an increasing population since reintroduction efforts in the late 1970s with a jump from 25 to 80 bald eagles from 2009 to 2010. The DHC collected weekend-only counts of observations of bald eagles by trained volunteers from 2014 to 2017 at the Mongaup Falls and Rio bald eagle viewing areas. These data show a decline from 1,150 observations in 2014 to 200 observations in 2015, then a steady increase to 850 observations in 2017. Data are only provided separately for Mongaup Falls and Rio in 2014 and 2015, but Mongaup Falls had more observed eagles than Rio. We note that these most recent data have only been collected at the publicly provided viewing areas, and no data are provided for other areas at the Mongaup Falls or Rio Projects or at the Swinging Bridge Project. The existing data do not allow for an evaluation of winter foraging activity in relation to the Projects' operations as there are no data for other foraging areas or activities at the Projects.

The Applicant has provided data from the *1992 –1993 Entrainment Studies: Mongaup Hydroelectric Projects* in the Supplement. The stated goal of this study was to evaluate the availability of entrained alewife for winter feeding of bald eagles. The Service identified the deficiencies of this study in detail in our original study request letter. Despite issues with sampling efficiency, study design, and data analysis, this study did show that alewife (*Alosa pseudoharengus*) was the most abundant species entrained through the Projects in the winter months and that these individuals were typically less than 10 cm in length. Additional anecdotal evidence suggests that the open water in the winter months and the alewife forage base entrained through the Projects are the primary reasons for the notable winter bald eagle population at the

[2] U.S. Fish and Wildlife Service. 2016. Bald and Golden Eagles: Population demographics and estimation of sustainable take in the United States, 2016 update. Division of Migratory Bird Management, Washington D.C., USA.

Projects. Actual data regarding the foraging activities of bald eagles at the Projects, and the degree to which they feed on entrained fish and alewife, in particular, do not exist.

If wintering bald eagles are found to be foraging on potentially entrained fish species that are primarily not alewife, then an updated winter entrainment study may be needed. The general conclusions of the original entrainment study may be incorrect and/or entrainment rates may have changed at the Projects since the original licensing. We note that changes at the Projects since the original entrainment study such as the implementation of minimum flows (i.e. intake conditions, mortality through release structures), changes in powerhouse operation (e.g., decommissioning of Unit 1 at Swinging Bridge, minimum flow powerhouse at Rio), and any changes in the fishery over time may have changed winter species-specific entrainment rates at the Projects. Additional data regarding the species currently entrained through the Projects that are potential forage for the wintering bald eagle population at the Projects would be needed.

5. *Nexus to Projects Operations and Effects*

Activities (e.g., tree clearing, maintenance activities, recreation enhancements) conducted by the Applicant may cause "take" of bald eagles if these activities occur in the vicinity of nesting, roosting, or feeding individuals. In order to prevent any "take" during the course of the license, the Service will coordinate with the Applicant to develop a management plan for the protection of the bald eagle population at the Projects; this plan should be incorporated into the new license. The development of this management plan will require a current assessment of the bald eagle population at the Projects. The Service and the NYSDEC may recommend particular PME measures based on the location of nesting sites and the areas of highest concentration of eagles.

The Projects entrain fish that have been anecdotally noted as a primary forage source for bald eagles in the vicinity of the Projects. The Service may prescribe fish passage and protection measures under our mandatory authority in Section 18 of the Federal Power Act of 1935 (16 USC 791 et seq.) in order to facilitate upstream and downstream passage of American eel as well as provide protection for resident species in the Projects' impoundments. We require additional information in order to determine what effects fish passage and protection measures may have on fish entrainment (see Fish Protection and Downstream Passage Study) and additional information in order to determine what impacts these measures may have on the winter bald eagle populations at the Projects.

6. *Methodology Consistent with Accepted Practice*

The Service recommends the following methodologies, consistent with standard avian survey, forage activity, and entrainment study methods found in the literature and in other FERC relicensings, for this study by objective:

Objective 1: The Service recommends that the Applicant collect all available data from the NYSDEC and the DHC regarding eagle active and inactive bald eagle nest locations in the vicinity of the Projects. The Applicant would then conduct one field season of study during the nesting season (December 1 through June 30) to identify the location and status (present/absent, active/inactive) of all nests in the vicinity of the Projects utilizing visual surveys. We

recommend that the Applicant follow the protocols found in the Service's *Bald Eagle Management Guidelines and Conservation Measures*[3]. We are not recommending aerial surveys or fledgling population estimates at this time due to the cost and risk for take during these methods; however, any observations of eagles during this survey should also be recorded and provided in the Study Report with other special status species survey results, as requested by the FERC. The Applicant could then prepare a map and summary of nest locations in the vicinity of the Projects symbolized by status.

Objective 2: The Service recommends that the Applicant conduct one field season (January – February) of observation of winter bald eagle activity in the impoundments, tailraces, and downstream areas of the Projects. We recommend that this survey be conducted for two total weeks (one week in January and one week in February) and that daily survey routes be followed to cover all areas across the Projects (e.g., upper reservoir, middle reservoir, lower reservoir, below powerhouse) each day utilizing standard avian survey techniques. Counts and locations of observations of bald eagles should be recorded with an indication of whether or not feeding/foraging activities are occurring. The Applicant could then prepare maps of the winter population (per survey effort per location) and winter activity of bald eagles at the Projects by plotting and interpolating the density of observations of bald eagles for all activity and for feeding/foraging activity, separately.

Objective 3: The Service recommends that the Applicant conduct one field season (January – February) of observations of all bald eagle foraging activity across all of the Projects. This study will be most useful if the Applicant can identify forage species and size whenever possible. Observations should be recorded of all forage species regardless of taxonomic identity, but general categories are acceptable (e.g., fish, mammal, bird). For fish species, we recommend collection of data related to species identity, especially for alewife, if possible, but best estimates of the size of fish are needed. We suggest that size intervals be recorded (i.e., 0 – 10 cm, 10 – 30 cm, etc.) whenever possible. The Service recommends a staggered approach to this methodology. We recommend that any incidental observations of forage species be noted during the 2 weeks of survey for Objective 2, as described above. While unlikely, if all or nearly all foraging activity is not associated with areas near or immediately downstream from the Projects' powerhouses, bald eagles are likely not using entrained fish as a forage base and further study may not be required, if determined by the Service and the NYSDEC. Otherwise, we recommend this study continue for an additional week immediately following each survey week for Objective 2, focusing specifically on forage species in areas identified as the highest concentrations of eagle activity. The Service recommends all observations during the week of focused survey be collected on a continuous basis during daylight hours at each location surveyed during this period. Generation should be noted for each location associated with a downstream area from any Project's powerhouse. It is important that survey efforts be designed to capture the effects of project operations such that observations of foraging overlap with periods with and without generation. The Applicant could then prepare: 1) a detailed table of counts of bald eagle foraging activity by forage species/size by location; and 2) a figure of foraging activity for any surveyed areas below a Project powerhouse in relation to generation across the days surveyed.

[3] https://www.fws.gov/northeast/ecologicalservices/eagleguidelines/recreation.html

Objective 4: The Service recommends that the Applicant provide an analysis of the relationship of the observed winter forage activity of bald eagles at the Projects and fish entrained through the Projects due to project operations. The Service recommends that this analysis fully incorporate the data and results from Objectives 2 and 3.

Objective 5: The Service recommends a staggered approach to this Objective. If the Service and the NYSDEC determine that the analysis in Objective 4 supports the general conclusion from the original entrainment study, in that all or nearly all of the forage fish species recorded below the Projects' powerhouses are alewife generally less than 10 cm in length, then the Service believes that the existing information is sufficient for our analysis of entrainment effects on the foraging activity of bald eagles at the Projects. Otherwise, the Service recommends that the Applicant conduct an updated study of winter entrainment at the Projects, in consultation with the Service and the NYSDEC. This study may be a desktop analysis of entrainment (see our Fish Entrainment and Downstream Passage study request), if survey data for the winter fishery population is sufficiently robust, as determined by the Service and the NYSDEC. Otherwise, the Service recommends that the Applicant conduct a field-based study. This study may employ net-capture methods, radio tagging, or any other method approved by the agencies, but we recommend that any method chosen must have a collection efficiency of greater than 80%, be conducted under the full range of conditions (e.g., minimum flow release, one to four turbine generation (as applicable)), and be conducted across multiple days during the peak foraging season (January – February) at each location.

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

The cost and level of effort will likely be low. Objective 1 will require 2 to 4 weeks for one to two trained biologists to gather data, conduct surveys, and prepare a map and summary. Objectives 2 – 4 will require two to four trained biologists 4 weeks for surveys and 3 to 5 weeks for data analysis and report preparation. If Objective 5 is requested, the cost and effort will depend on the methods employed, but could range from low cost and effort for 1 to 2 weeks with one biologist to conduct a desktop analysis of entrainment based on other data collected in the fisheries surveys, to a relatively high cost and effort involving a team of biologists developing and conducting a field-based entrainment study and preparing reports over several months to a year.

The FERC submitted a study request for Special-status Wildlife Species and Habitat Assessment, which the Service supports. Objective 1 of this study request is complimented by this larger request from the FERC, and we provide more detail regarding bald eagles in our request with a similar expectation of effort during the breeding season. The Applicant has proposed to collect incidental observations and document encountered bald eagle nest locations during the summer and fall. However, this survey effort would largely occur outside of the nesting season (December 1 through June 30) and as proposed may exclude known nesting locations. Objective 2 may additionally be complimented by the FERCs request. The FERC references that bald eagles may use all five reservoirs during the winter months. The Service recommends the collection of additional information to understand eagle foraging and habitat use at the Projects. The Applicant has proposed not to survey bald eagles in the winter months. No alternative studies have been proposed to address winter foraging and the relationship to entrainment as

requested in Objectives 3 – 5. The data collected for Objectives 3 – 5 will necessarily provide the data for Objective 2 based on our recommended methodology.

C. Black Brook Dam Removal Study

The Applicant did not include this study in the PSP based on an opinion that this study is designed to evaluate a PME measure prior to determining if such a measure is warranted. The Applicant also cites a lack of Project nexus. In its comments filed December 6, 2017, the FERC concurred with our request to evaluate the Black Brook Dam for decommissioning and requested studies to support this evaluation. The Service supports this request by the FERC and looks forward to consulting with the Applicant regarding the potential to remove this dam.

D. Base and Bypass Reach Flows

The applicant did not include this study in the PSP based on the adequacy of the existing data and referenced the 1988 Instream Flow Incremental Methodology (IFIM) study conducted during the original licensing. The Service proposed a Delphi study in our original study request. The material below is being provided as a supplement and modification to our original study request.

The Applicant stated in the PSP that they believe the existing IFIM study is sufficient, in conjunction with additional data being collected during this relicensing, to make flow recommendations at the Projects. This statement is built on the assumption by the Applicant that there have been no significant changes in the downstream reaches in the last 30 years; however, no evidence has been presented to verify this assumption. Additionally, the existing IFIM study utilized methods that were generally standard at that time; however, significant advancements in the IFIM, stream assessment, and modeling techniques have been made since that time.

The Service still recommends the Applicant include a base and bypass reach flow study in the RSP. Flows are one of the central resource issues being evaluated at the Projects, and these studies are needed to assess any changes in flows that may result from this relicensing. We suggest a structured approach to addressing the goals and objectives of this study.

If the Applicant does not wish to initially pursue a Delphi-type study up front, the Service recommends that the Applicant verify the adequacy of the existing IFIM study to address the goals and objectives outlined in our original study request. We would recommend that the Applicant verify that the existing channel conditions are indeed unchanged compared to those observed in the existing IFIM study. This would involve relocating and resampling a subset of the transects in select study reaches. The resampled transects should have an overall error of less than five percent (95% confidence) compared to the original study. We recommend that transects selected to cover the extent of the reach and the variability within the reach be resampled in selected study reaches. The Service recommends that transects be resampled in Black Lake Creek below Toronto Dam, the Mongaup Falls bypassed reach, the Rio bypassed reach, and the Mongaup River downstream of the Rio powerhouse. This will focus sampling on the reaches mostly likely to have changed and the most well studied reaches in the existing IFIM study. One of the fundamental underpinnings of an IFIM study is the ability to assess available

habitat for species and life stages selected by the stakeholders. The Applicant has stated that they are able to do this with the existing IFIM data. The Service infers that this statement, along with the ability to validate the transect measurements, means that the Applicant is in possession of the raw data for each transect measured for each studied reach. We recommend that the availability of this data be verified and provided to the Service and the NYSDEC, if requested.

Additionally, we recommend that the assumptions and methods in the existing IFIM study be updated as needed and compared to current IFIM guidelines. This would involve verifying that the habitat suitability index curves for the target species are current, but may also involve the recalibration of the wetted surface perimeter models and resultant weighted usable area curves. The Service recommends that the Applicant thoroughly review the methods outlined in the Instream Flows for Riverine Resource Stewardship (2004) to ensure that the existing data meet current standards for the IFIM.

If the Applicant can demonstrate the adequacy of these existing data, the Service would support its acceptance as a component in the larger data collection. However, IFIM studies are not meant to be used as the sole basis for flow decisions, and we would caution the use of these results in that manner. The IFIM was primarily developed as a tool to aid in negotiations among the stakeholders.

The Service recommends that the Applicant include a placeholder in the flow study for the agencies to review any validation of the existing IFIM study, current fishery and water quality data, and the outputs from the Reservoir Water Level Fluctuation/Operation model prior to requests for additional study. We recommend this review occur after the end of year one in the study period. The results of the ongoing studies will address the quantity of water available for allocation to different uses, any potential changes in target species, and help determine whether any additional studies to assess potential changes in flow are needed. The Service may request additional study in Black Lake Creek below Cliff Lake, reanalysis of target reaches using the existing IFIM, and/or individual-based models for target species, if appropriate.

The Service recommends that this study should provide the agencies with the opportunity to observe the existing minimum flows across all of the affected reaches, and to observe any final proposed flow modifications, if requested.

E. Reservoir Water Level Fluctuation/Operation Study

The Applicant has proposed this study to address study requests by multiple stakeholders, as well as the FERC. The Service generally supports this study. We note that the Applicant included study requests to look at the impacts of the Projects on the Delaware River through gauge data; however, they are only proposing to look at flows, and did not identify which gauges would be used. The National Park Service requested that the Applicant also evaluate temperature data, as available, in the Delaware River, and we recommend that these data be included in this analysis. Additionally, the presentation of these data may require more than a single plot. We recommend analyzing Project generation versus changes in streamflow in the Delaware River based on percentage of flow provided and amount of daily variation resulting from Project operations. Lastly, the Service requested a log of scheduled release dates compared to actual releases to

evaluate the impacts of changes in release schedules on the Delaware River. These data are partly being requested under our obligations under the Endangered Species Act (ESA) for potential impacts to the federally listed dwarf wedgemussel (*Alasmidonta heterodon*).

We also recommend that the table to be developed with volumes released from the reservoirs in a typical year include data for the volumes released for whitewater releases and show a range of generation volumes including low, typical, and high generation years. This data will allow for the stakeholders to evaluate the impacts of whitewater releases on reservoir levels in comparison with minimum flows, especially under drought conditions.

F. Aquatic Habitat Assessment Study

The Applicant has combined several study requests into this study plan. We urge the Applicant to separate out the individual studies within this larger study to meet the FERC's requirements for study requests and to provide clarity to the requestors and the FERC regarding what data are being collected and why.

The Service recommends that the Applicant not only verify the National Wetlands Inventory and NYSDEC wetlands within the Projects' boundaries, but also map any additional wetlands encountered, per our original study request. The information contained in these two databases is not always complete enough to address project impacts.

The Applicant proposed in the PSP to opportunistically survey the shoreline habitat of the reservoirs based on water levels. We note in the Supplement that the Applicant has incorporated our recommendation at the Study Planning Meeting to use additional techniques that do not require a full reservoir drawdown to acquire these data. We appreciate this improvement to the methodology and look forward to this addition in the RSP. The Service recommended that the Applicant identify erosional areas within the impoundments as part of our study request in order to determine areas within the Projects' boundaries that may be negatively impacting water quality. Please incorporate the collection of these data into the RSP. We are concerned that the period of observation has been proposed to be limited to summer and fall. Reservoir levels vary dramatically over the course of the year, and we encourage the Applicant to sample over a whole year, at different reservoir levels, with multiple sampling techniques, to obtain the data needed to address the goals and objectives of this study.

The FERC requested a Special-status Wildlife Species and Habitat Assessment, which the Service supports. The Service recommends that the Applicant include any necessary updates to these studies in the RSP and indicate that they will consult with the Service regarding potential impacts to federally listed species. We appreciate the opportunity to provide technical assistance regarding federally listed species and any surveys that may be necessary during the study period.

G. Fisheries Survey Study

The Applicant included this study in the PSP; however, we note two particular areas of concern: 1) the fisheries survey does not incorporate a spring sampling period; and 2) there are no surveys planned in the downstream reach of the Mongaup River below the Rio powerhouse. This study

design will preferentially exclude most of the data related to migratory fish species [i.e., American shad (*Alosa sapidissima*) and American eel (*Anguilla rostrata*)] that are found below the Rio dam. We recommended targeted surveys of these species. The Service is concerned that the lack of data during the spring migratory period will limit our ability to inform any potential fishway prescriptions under our Section 18 authority. For American eel, we recommend that the abundance, size, lifestage, and areas of concentration related to the tailrace and the base of the Rio dam be collected. We note specifically that size and timing of American eels during upstream and downstream migration varies across watersheds and these data strongly influence license conditions for upstream fishways for this species. The Applicant has not provided any additional existing information to address this gap in the PSP fisheries survey methodology.

We are also concerned that a lack of spring sampling will prevent any assessment of spawning for American shad below the Rio dam. Spawning for this species is strongly influenced by flows and temperatures that are largely controlled by Project operations. Additionally, spring surveys are standard protocol for the NYSDEC for assessing bass species [largemouth bass (*Micropterus salmoides*) and smallmouth bass (*M. dolomieu*)] in New York State. Bass species are two of the primary game species in the reservoirs and current license conditions related to reservoir elevations have been conditioned in order to promote this fishery.

The NYSDEC has noted that the Mongaup River below the Rio powerhouse is a popular recreational fishery as well as a noted whitewater recreation area. We are concerned with the proposed lack of a survey in this reach, in particular, in that these competing interests and the effects of Project operations on the fishery will not be able to be assessed.

The Service recommended a full year of fisheries data in our original study request. We again recommend that late fall/winter, early spring data should be collected as these species may be the entrained forage base for bald eagles and understanding the current condition of this seasonal fishery may preclude the need to conduct field-based entrainment studies for winter entrainment. Additionally, alewife are generally thought to be the forage base for the fisheries in the reservoirs. The current status of the alewife populations must be understood in order for the NYSDEC to manage the fishery in the reservoirs. Based on this need and our continued review of the existing data, the Service wishes to add a recommendation for surveys for alewife to the study methodology for the Fisheries Survey.

The Applicant has largely proposed to conduct the fisheries survey through the use of electrofishing and gill nets. We recommended in our study request that the Applicant utilize a variety of methods to sample the fishery (e.g., seines, trap nets). The Service additionally recommends that the Applicant seek to utilize methods that are consistent with the previous survey efforts by the NYSDEC and during the original relicensing, in order to facilitate comparisons of trends over time.

H. Fish Passage Study

The Applicant included this study in the PSP, although we are concerned that this study did not address our original study request or the information contained within it adequately. The Applicant excluded migratory species including American eel and American shad from the

resource management goals for this study. These migratory species occur below the Rio dam, and American eel historically occurred throughout the Mongaup River. The Applicant has not addressed our concerns regarding the shortcomings of the existing entrainment study other than to say that they expect the results will be the same. The Applicant has not provided any additional information to address our study request as it was written. We recommend that the Applicant incorporate our recommended study into the RSP as this information is necessary for our review under our Section 18 authority.

I. Water Quality Study

We largely support this study which the Applicant included in the PSP. We recommend that water quality information be collected at both the upstream and downstream end of all studied reaches in order to assess changes in water quality throughout the reaches. This is especially important for water temperature in trout streams. The Service recommends that continuous water quality data be collected in the immediate vicinity and at the level of the intakes to evaluate the dissolved oxygen and temperature conditions at the intakes related to generation, and changes due to continuous minimum flow releases implemented in the original licensing. Concurrent with our recommendation for spring fisheries information, we recommend water quality information be collected throughout the year in order to determine what effect water quality may be having on the fisheries during those seasons. We request that water quality be monitored on a 15-minute interval as generation periods are relatively short during each day, and 1-hour intervals may not adequately capture the variation associated with generation. This should add little cost and effort to the overall study. The Service supports FERC's request to collect ambient air temperature to relate to the water temperature data collected in this study. Air temperature data should also be relatively easily collected with little additional cost or effort.

J. Macroinvertebrate and Mussel Survey Study

The Applicant included this study in the PSP, and we largely support the methods in this study. We recommend specifically that additional survey locations for both benthic macroinvertebrates and mussels be placed within the impoundments and in the Mongaup River from the Rio powerhouse to the confluence with the Delaware River. These data are needed to evaluate the water quality and forage base for the fishery, and under our obligations under the ESA to assess any potential impacts to the federally listed dwarf wedgemussel in the downstream reaches of the Mongaup River.

Foregoing Studies in Lieu of Protection, Mitigation, and Enhancement Measures

We anticipate that the Applicant will pursue a settlement agreement for these Projects. As such, during the development of the Study Plan, there may be an opportunity to reduce some of these studies in scope, or even forego some of them, if agreements can be reached up front regarding certain PME measures. The Service recommends that, prior to the development of the RSP, the Applicant convenes a meeting with the stakeholders to determine which studies could be reduced or eliminated in return for agreements to proceed with certain PME measures.

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We recommend that the RSP developed by the Applicant incorporate all of the comments above. We appreciate the additional details provided by the Applicant in the Supplement and encourage the Applicant to be as detailed as possible in the RSP to ensure that all the stakeholders understand what data is being collected.

Thank you for the opportunity to comment on this PSP. If you have any questions or desire additional information, please contact John Wiley at 607-753-9334.

Sincerely,

David A. Stilwell
Field Supervisor

cc: TU, Plattsburgh, NY (W. Wellman)
NYSDEC, New Paltz, NY (J. Murray)
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December 11, 2017

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Re: Rio Hydroelectric Project (FERC No. 9690)
Mongaup Falls Hydroelectric Project (FERC No. 10481)
Swinging Bridge Hydroelectric Project (FERC No. 10482)

Comments on Proposed Study Plan

Dear Mr. Gates:

The New York State Department of Environmental Conservation (NYSDEC) has reviewed the September 12, 2017 *Proposed Study Plan* (PSP), and the submitted by co-licensees Eagle Creek Hydro Power, LLC; Eagle Creek Water Resources, LLC; and Eagle Creek Land Resources, LLC (collectively referred to as "Eagle Creek" or "The Applicant") for relicensing the existing Rio Hydroelectric Project (FERC No. 9690), Mongaup Falls Hydroelectric Project (FERC No. 10481), and Swinging Bridge Hydroelectric Project (FERC No. 10482). The three projects, collectively referred to as the "Mongaup River Hydroelectric Projects", are located on the Mongaup River in Sullivan County, New York and a portion of the Rio Project is located in Orange County, New York.

The NYSDEC attended the October 4, 2017 Proposed Study Plan Meeting for the Mongaup River Hydroelectric Projects as well as an informal study planning meeting on November 9, 2017, with the Federal Energy Regulatory Commission (FERC) and the United States Fish and Wildlife Service (USFWS), the presentations of which were largely filed by the Applicant with the FERC in the November 29, 2017, *Study Scoping Supplement Information* document (Supplement).

I. General Comments

The NYSDEC provided our comments on the Pre-Application Document (PAD) and requested studies in our July 28, 2017, letter to the Applicant as filed with the FERC. The PSP did not fully incorporate our requested studies. Specifically, the PSP did not adopt

the following studies requested by NYSDEC: 1) Bald Eagle Management Study; 2) Black Brook Dam Removal Study; and 3) a Base and Bypass Flow Study. NYSDEC reiterates are request to include these studies in the final study plan and provides further discussion on the importance of these studies below.

The Applicant frequently references the "robust" nature of the prior studies conducted in the 1980s and early 1990s in pursuit of the original license for the Projects as a justification for not conducting or limiting the scope of studies during the current relicensing. However, the majority of the existing data were collected prior to the implementation of notable operational changes required during the original licensing and throughout the current license (e.g., minimum flows, impoundment level restrictions, decommissioning and installation of powerhouses). Judicial precedent holds that the FERC cannot consider relicensing as merely a continuation of the *status quo* and that each relicensing is a new opportunity to rebalance the resources at hand (Yakima Indian Nation v. FERC, 746 F.2d 466(9th Cir. 1984)). The NYSDEC views this relicensing as a significant opportunity to evaluate the current condition of the resources and potential impacts from the Projects *with the benefit of comparison to* data collected during prelicensing conditions. Conditions have changed considerably since the projects were originally licensed (recreational uses, opportunities and demands, wildlife habitat, development, power demands and changes to weather and natural conditions), so if the applicant provides almost no new data, FERC will not have an adequate factual basis upon which to base a licensing decision. NYSDEC recommends that the Applicant collect additional data that is comparable to the existing data collected in the original licensing, and that which has become standard practice in relicensings since the early 1990s, in order to facilitate analyses of changes due to the original licensing and over time in order to best inform future license conditions at the Projects.

In addition, several of the proposed study requests were combined into a single study within the PSP. For example, the Aquatic Habitat Assessment Study Plan (Section 6 of PSP) consists of elements from both the NYSDEC requested Wetland Delineation Study and Impoundment Fluctuation Studies. The NYSDEC recommends that the Revised Study Plan (RSP) be restructured according to the study requests of the stakeholders as they were submitted so that their specific goals/objectives, nexuses and methodologies are readily accessible by the reader of the RSP.

II. Draft Application for Amendment License: Swinging Bridge Hydroelectric Project (FERC No. 10482) – November 1, 2017

Concurrent with the FERC relicensing of the "Mongaup River Hydroelectric Projects" is a proposed amendment in support of a new minimum flow unit and powerhouse to replace

the existing Unit No. 1 at the Swinging Bridge Hydroelectric Project. It appears Eagle Creek is pursuing the amendment through a separate amendment process, as compared to the relicensing process, given the existing contract between Eagle Creek and the New York State Energy Research and Development Authority (NYSERDA) that requires that the new unit be operational by July 2019. Therefore, in order to have the new equipment commissioned and operational by the contract deadline, the Draft Application for Amendment License for Swinging Bridge Hydroelectric Project (dated November 1, 2017) proposes a construction schedule in which construction of the new powerhouse, new penstock, and installation of Unit No. 3 at Swinging Bridge commences in 2018.

Since all studies proposed within the Proposed Study Plan are also scheduled to be conducted during 2018, the Proposed Study Plan must be revised to acknowledge the submission of the Draft Application for Amendment of License for Swinging Bridge Hydroelectric Project (dated November 1, 2017) and the potential of its proposed construction activities to affect the study results of the PSP. The Schedule for Conducting Proposed Studies (Table 15-1 of the PSP) should be revised to include the construction of the new minimum flow unit.

Due to the potential for construction activities to affect study results of the PSP, the construction schedule of the new minimum flow unit at Swinging Bridge must not conflict with the PSP's Schedule for Conducting Proposed Studies. Studies conducted during the relicensing process must provide information that reflect conditions occurring during normal operation of the Mongaup River Hydroelectric Projects. Therefore, the construction of proposed amendment will need to occur outside the time period in which studies proposed to occur within the vicinity of Swinging Bridge are conducted (i.e. Reservoir Water Level Fluctuation/Operation Study; Aquatic Habitat Assessment Study; Fisheries Survey Study; Fish Passage Study; Water Quality Study; and Macroinvertebrate and Mussel Survey Study). Correspondingly, the proposed amendment must not conflict with the proposed Bald Eagle Management Study (see Section IV.H of this letter) which NYSDEC requests to be included in the RSP and conducted during the winter months.

In addition, please be aware that the construction of the new minimum flow unit may require Eagle Creek to conduct a second season of studies (e.g. Water Quality Study) in order to access and compare conditions at the Swinging Bridge Hydroelectric Project pre and post construction.

III. Black Brook Dam Removal

The Applicant did not include this study in the PSP based on an opinion that this study is to evaluate a Protection, Mitigation, and Enhancement (PME) measure prior to determining if such a measure is warranted and due to a lack of project nexus. In its comments filed December 6, 2017, the FERC concurred with the USFWS request to evaluate the Black Brook Dam for decommissioning and requested studies to support this evaluation. NYSDEC supports this request by the FERC and look forward to consulting with the Applicant regarding the potential to remove this dam.

IV. Study Request Comments

A. Fish Surveys

While this study was included in the PSP, multiple areas of concern were noted with the overall plan: 1) the proposed general timeframe of surveys was limited to late summer/early fall, 2) there were no surveys proposed for Black Brook and limited surveys proposed for the Mongaup River below Rio Reservoir; and 3) electrofishing and gill nets are the only gear types proposed to be utilized. Also, these surveys are only scheduled to be conducted during one year with no provision for a second year of surveys. A second year of surveys should be repeated if the resulting data is deemed to be inadequate.

The timeframe of late summer/early fall for which the proposed surveys will be conducted is inadequate. The timeframe should include spring, summer, fall and winter if conditions allow and as originally requested. The timeframe and methods used to conduct these surveys should be consistent with prior NYSDEC surveys and surveys conducted during the original relicensing. Centrarchids (bass and sunfish) provide the primary gamefish in many of the project lakes, and NYSDEC protocol is to sample these species in spring with night boat electrofishing, when water temperatures are between 59 and 71 degrees (NYSDEC Centrarchid Sampling Manual 1989). Walleye, which also provide a popular sportfish in Swinging Bridge and Rio Reservoirs, are best sampled with a combination of methods, including night boat electrofishing during the fall when water temperatures range from 50 to 64 degrees. The protocols for this are outlined in the NYSDEC Percid Sampling Manual 1994.

Additionally, there are no surveys proposed for Black Brook and a lack of surveys proposed for the Mongaup River below Rio Reservoir. The Mongaup River is popular with anglers and is subject to highly variable flows due to whitewater releases. This section of river is utilized by migratory species such as American shad and American Eel as well as resident, wild brown trout. Spring, summer and fall sampling periods should be utilized to

determine the extent these species utilize this section of river and what effect the highly variable flows has on these species. Currently, no surveys are proposed to be conducted on Black Brook. Wild trout have been documented below the Black Brook dam which currently acts as an impediment to upstream movement of fish in this system. The fish community, with an emphasis on trout, should be examined upstream and downstream of the dam to determine any effect on fish distribution in the system.

Finally, trout streams, such as Black Brook, Black Lake Brook and the Mongaup River are typically sampled using stream electrofishing gear in the mid to late summer period. Stream electrofishing gear must be selected so as to provide adequate coverage of the stream section being sampled. Backpack electrofishing gear may be suitable for small narrow sections of stream, but multiple electrofishing gear types may need to be deployed simultaneously for wider stream sections with deeper heavier flow. Protocols for assessing trout streams in New York can be found in the publication by New York State DEC titled Guidelines for Stocking Trout Streams in New York State (Engstrom-Heg 1990). Ideally suitable length sections of stream (100 meters or more) should be isolated and temporarily blocked from fish emigration or immigration with nets, so a population estimate can be made. These sections should be representative of the stream section being studied and multiple sites should be sampled in each study section.

The gear types currently proposed to conduct these surveys is inadequate. Additional gear types such as seines and trap nets should be used to sample the wide variety of fish species found in these waterbodies. These gear types are ideal to collect species that may not be vulnerable to boat electrofishing and gill nets. For example, seines are ideal to sample near shore zones of lakes and reservoirs for smaller fish such as various minnow species and any young of year fish.

NYSDEC recommends following survey methods outlined in Lake and Pond Fish Community Survey Protocols (Holst and Loukmas 2013). "*These procedures describe standard equipment and methods to be used in the field for all Fish Community Surveys in lakes. The ability of any particular gear to capture fish is affected by fish species, size and behavior, the in-water physical and hydrological conditions of the sampling site, and other seasonal variables. No single gear is effective for all the potential species that may be found in a lake. However, when they are used in combination, these gears will effectively sample the majority of fish species found in New York's inland lakes and ponds. These procedures will minimize variability and ideally collect 95% or more of all fish species present in a lake. The remaining 5% of fish species are the cryptic species or those at such low densities that their probability of capture is very low overall.*"

The forage base for predatory fish in many of the reservoirs in the Project are based on the Alewife population. Alewife are also an important forage for Bald Eagles. The

abundance of Alewife and their distribution seasonally within the reservoir, especially in proximity to the intake structures, also effects our understanding of how this species is entrained. Alewife abundance and seasonal distribution within the reservoirs is not adequately being studied in the PSP. It is the position of NYSDEC that the most effective, and maybe only way to design a study to understand the current status of this species and how it is affected by the Project is by using hydro-acoustic surveys. Absent another technique that would answer these questions equally well, it is the position of the NYSDEC that hydro-acoustic surveys for alewife should be included.

1. *Goals and Objectives*

The goals and objectives of this study are to provide information on the existing fishery and resources in the vicinity of the Mongaup River Projects, including areas upstream and downstream of the dam, to aid in the determination of what the impacts of this Project may be. The information to be collected should include both temporal and spatial aspects of species distribution; age, size, sex and condition data; habitat utilization; and fish movement patterns. Reference reaches should be established in streams below each dam and population and abundance (numbers of fish and biomass) estimates that are representative of the section be conducted for each fish species. These population and abundance estimates should then be compared to other fisheries of the area.

2. *Resource Management Goals*

NYSDEC's mission is "*to conserve, improve and protect New York's natural resources and environment and to prevent, abate and control water, land and air pollution, in order to enhance the health, safety and welfare of the people of the state and their overall economic and social well-being.*" The natural resource management goals within the Mongaup River Projects areas, as well as immediately outside of those areas, will be consistent with our mission while focusing on protecting and enhancing fish and wildlife habitat, and improving public access.

Specific management goals for each project water are as follows:

Swinging Bridge Reservoir: Swinging Bridge is currently managed as a warmwater fishery with an emphasis on naturally reproducing walleye and centrarchid species including largemouth bass, smallmouth bass and black crappie. Common carp are also a target by shore anglers, as was found in a NYSDEC Creel Survey conducted in 2014/15. At that time, common carp were being targeted by 32% of the shore anglers and anglers targeting "anything" comprised 41% to 55% of the three angling groups analyzed for (boat, shore, and ice).

Mongaup Falls Reservoir: Mongaup Falls is currently managed for coldwater and warmwater fish species. Brown trout represent the coldwater fishery and are stocked on an annual basis. Largemouth bass and smallmouth bass are the predominant warmwater fish species the reservoir is managed for, but walleye are now also a potential target. The oxygenated coldwater volume of water that enters this reservoir via release from Swinging Bridge Reservoir undoubtedly plays a role in maintaining conditions for trout to survive through the summer in this reservoir.

Rio Reservoir: Rio is currently managed for naturally reproducing centrarchid species including smallmouth and largemouth bass as well as walleye which are stocked on an annual basis with hopes of establishing a naturally reproducing population. Fishing is prohibited from Dec 1 through March 31 to protect an eagle nesting area.

Toronto Reservoir: Toronto is currently managed as a warmwater fishery with smallmouth bass as the primary gamefish. Large chain pickerel are also a target, especially since the existing State record chain pickerel was caught from this reservoir.

Cliff Lake: Cliff Lake is currently managed for centrarchid species including largemouth bass, smallmouth bass and various sunfish species. Popularity of this reservoir for fishing may be limited by the existing difficulty in accessing this water for both shore fishing and with a boat. DEC Fisheries would like to see this access improved and expanded expanded as long as other Natural Resource objectives, particularly regarding Bald Eagles are met.

Mongaup River: Mongaup River is currently managed as a coldwater fishery in all sections with brown trout as the primary focus. This fishery depends upon coldwater releases from Swinging Bridge, Mongaup Falls and Rio Reservoirs to maintain trout populations here. These releases must remain both cold enough and of high enough quality (dissolved oxygen., pH, etc.) from the base of each of these reservoirs all the way to the confluence with Delaware River. The river is stocked above Swinging Bridge Reservoir on a yearly basis with brown trout. The section below Swinging Bridge is assumed to be comprised of wild and stocked brown trout, but this needs to be further assessed. The stocked fish likely come from the Mongaup Falls Reservoir stocking which occurs at the Forestburgh Rd bridge on a yearly basis. The rest of the river is considered a wild brown trout fishery with a few stray stocked fish mixed in.

Black Lake Creek: This creek is managed as a wild brook trout fishery and is maintained from coldwater releases from Toronto Reservoir and Cliff Lake. This fishery is best managed through assuring an adequate volume of high quality water

flow (particularly dissolved oxygen and temperature) is maintained from the base of each dam through its entire length.

Black Brook: This creek is managed as a wild trout fishery with brook and brown trout present.

3. *Public Interest*

The requestor is a state resource agency.

4. *Existing Information*

There is limited recent information regarding fisheries in the vicinity of the Mongaup River Projects. Any recent collections have not been comprehensive, and have had a very limited fisheries objective in mind. There are some data available from the original licensing in the 1980s; however, 30 years of changes in angling pressure, angling regulations, stocking efforts, water quality, water quantity, habitat availability, minimum flows, and seasonal impoundment fluctuation limits have likely altered the fishery. Data from the original licensing will be helpful in determining changes and trends over the last 30 years. However, the data that was collected in conjunction with the original license did not utilize the methods that have now been established by NYSDEC (as cited above). Using these updated methods will help DEC compare these waters to other waters throughout the New York State and within the Mongaup system as we move forward in time.

DEC Fisheries has provided a summary of all historic fisheries survey data in their files pertaining to the fisheries resources within the project area. Additional detailed fisheries information can be provided via specific requests for both within and outside the project area. This will enable the applicant to compare changes in the fish populations to different reservoir release regimes through time and to other comparable local fisheries resources in the area.

5. *Nexus to Project Operations and Effects*

The Mongaup River Projects' dams serves as a barrier to upstream and downstream migration to fish. Fish moving downstream are subjected to potential mortality from impingement and entrainment. The Project alters flows in the bypassed reach, modifies flows downstream from the Mongaup River Projects, and impacts habitats in the impoundment via fluctuations.

6. *Methodology Consistent with Accepted Practice*

The Applicant should conduct comprehensive fisheries surveys within the vicinity of the Mongaup River Projects. Comprehensive sampling for fisheries data collection should include, but not be limited to, the use of electrofishing, gill netting, trap netting, minnow traps, seining, and angling. The survey work should be done for at least 1 full year; with an option for a second year of study should the data collected be deemed inadequate upon review by the NYSDEC and the USFWS. The survey should cover at least three seasons (spring, summer, and fall), and all four seasons, if possible. The information collected should include species identification, size, age, sex, and condition, as well as movement patterns and habitat utilization. Standard water quality data (e.g. water temperature, dissolved oxygen, pH, and conductivity) should also be collected in conjunction with these surveys. These studies should focus on the general fishery resources.

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

NYSDEC recommends using protocols outlined in the following:

- Guidelines for Stocking Trout Streams in New York State (Engstrom-Heg 1990)
- Lake and Pond Fish Community Survey Protocols (Holst and Loukmas 2013
- NYSDEC Centrarchid Sampling Manual 1989
- NYSDEC Percid Sampling Manual 1994.

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, macroinvertebrates and water quality) into one task, etc. The existing literature is 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.

B. **Macroinvertebrate Surveys**

The Applicant included this study in the PSP, and NYSDEC largely supports the methods in this study. However, NYSDEC strongly recommends that additional survey locations for both benthic macroinvertebrates and mussels be placed within the impoundments and in the Mongaup River to the confluence with the Delaware River. These data are needed to evaluate the water quality and forage base for the fishery, and under our obligations under Article 11 of NYS Environmental Conservation Law (ECL) to assess any potential impacts to the state listed mussel species in the downstream reaches of the Mongaup River.

1. *Goals and Objectives*

The goals and objectives of this study are to provide information on the existing benthic macroinvertebrate populations upstream and downstream of the facilities that are impacted by Mongaup River Projects operations. This information will be used to assess impacts the Mongaup River Projects may have on the aquatic ecosystem, assess if current water quality standards are impaired and determine mitigation for these impacts. This information is necessary to the §401 WQC application for the Projects and their compliance with State water quality standards.

2. *Resource Management Goals*

NYSDEC's mission is "*to conserve, improve and protect New York's natural resources and environment and to prevent, abate and control water, land and air pollution, in order to enhance the health, safety and welfare of the people of the state and their overall economic and social well-being.*" The natural resource management goals within the Mongaup River Projects areas, as well as immediately outside of those areas, will be consistent with our mission while focusing on protecting and enhancing fish and wildlife habitat, and improving public access.

Information regarding the aquatic insects and mussels in the flowing waters of the State of New York are of great importance to the NYSDEC achieving its mission.

3. *Public Interest*

The requestor is a state resource agency.

4. *Existing Information*

The PAD/PSP/Supplement provides some information related to benthic macroinvertebrates, but there is no recent site specific information regarding

freshwater mussels and other macroinvertebrate species in the basin. Sampling is needed in the vicinity of the dam, in the by-passed reach and the impoundment are necessary to help determine minimum flow needs and the macroinvertebrate data will be considered by NYSDEC in connection with its review of the §401 WQC application for the Project.

5. *Nexus to Project Operations and Effects*

The Mongaup River Projects alter the natural flows upstream and downstream. These areas are important for macroinvertebrate propagation and survival. Fish and wildlife species rely on the macroinvertebrate community as a food source and can be impacted by reductions in macroinvertebrate production. Freshwater mussels depend on fish host species and the Mongaup River Projects' dams blocks fish movement both upstream and downstream. The turbine intakes may impinge or entrain fish, resulting in mortality. The Mongaup River Projects may also affect the amount of habitat available for mussels within the Mongaup River Projects boundaries in the impoundment.

6. *Methodology Consistent with Accepted Practice*

Information is needed regarding macroinvertebrate (e.g. aquatic insects, mussels... etc.) populations in the impoundment and downstream of the dam and tailrace as well as the by-pass reaches of the Mongaup River Projects. A critical evaluation (both qualitative and quantitative) of macroinvertebrate communities in all instream habitats affected by the operation of the Mongaup River Projects is needed.

Sampling should be conducted seasonally and include the use of both shallow water and deep water sampling gear. Collections should be stratified by microhabitat (sediment size). Macroinvertebrates will be identified to species. Since any one sampling year may experience atypical environmental conditions (dry year verses wet year; low water verses high water; colder verse warmer temperature years) the Department recommends more than 1 year of data collection to try to capture typical environmental conditions and to establish current baseline conditions in the flowing waters affected by the Mongaup River Projects.

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, macroinvertebrates, and water quality) into one task, etc. The existing literature is inadequate to fully address projects 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.

C. Fish Protection, Upstream and Downstream Passage Studies

The Applicant included this study in the PSP, although we are concerned that this study did not address the original study request by USFWS or the information contained within it adequately. The Applicant excluded migratory species including American eel and American shad from the resource management goals for this study. These migratory species occur below the Rio dam, and American eel historically occurred throughout the Mongaup River. The Applicant has not addressed the USFWS concerns (that NYS DEC concurs with) regarding the existing entrainment study other than to say that they expect the results will be the same. The Applicant failed to address our request to explore alternatives to reduce fish entrainment and impingement within the project. The Applicant has not provided any additional information to address the study request as it was written by USFWS. We recommend that the Applicant incorporate the recommended study as presented in USFS's original request as this information is necessary for review under their Section 18 authority.

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 these sites. The information obtained will allow NYSDEC aquatic biologists and USFWS's fishway engineers to evaluate the potential effectiveness of various options.

This study should include 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 dams should be investigated. Careful attention should be paid to attraction flows, guidance mechanisms and velocities. The fish moving downriver must be diverted away from the turbines and guided to the downstream passage facility. Adequate attraction and conveyance flows must be provided. The passage facility should not create a bottleneck that would delay downstream movement or expose the fish to excessive predation. All passage facilities should be

designed to prevent blockage from ice and debris and should be as maintenance-free as is feasible. They must be able to operate under all flow conditions experienced in the Mongaup River Basin.

In addition to literature review and on-site investigations of existing facilities, the Applicant should collect site-specific data from the Mongaup River Projects to aid in the design of protection and passage facilities. This information should include flows, velocities, water depths, and substrates.

The Applicant should also collect information on the passage requirements of the fish species found in the Mongaup River Basin. This information should include 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.

2. *Resource Management Goals*

NYSDEC's mission is "*to conserve, improve and protect New York's natural resources and environment and to prevent, abate and control water, land and air pollution, in order to enhance the health, safety and welfare of the people of the state and their overall economic and social well-being.*" The natural resource management goals within the Mongaup River Projects areas, as well as immediately outside of those areas, will be consistent with our mission while focusing on protecting and enhancing fish and wildlife habitat, and improving public access.

3. *Public Interest*

The requestor is a state resource agency.

4. *Existing Information*

The PAD does not provide any information regarding protection and passage options. There is little information in the PAD regarding Black Brook Dam or its impoundment. The potential to remove Black Brook Dam is unknown.

The New York State Department of Environmental Conservation concurs with the conclusion made by the U.S. Fish and Wildlife Service (USFWS) regarding the reliability and usefulness of the entrainment study referenced in Section 5.4.1 of the PAD. An updated analysis with current fishery data is needed.

5. *Nexus to Project Operations and Effects*

Dams block fish movements both upstream and downstream. The turbine intakes may impinge or entrain fish, resulting in mortality. The existing minimum flow release structures may not be adequate for fish passage.

New licenses issued for projects on similar rivers throughout New York State, 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.

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, discussions with fisheries biologists, 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.

D. Base Flow Studies and Habitat Analysis

The Applicant did not include this study in the PSP based on the adequacy of the existing data and referenced the 1988 Instream Flow Incremental Methodology (IFIM) study conducted during the original licensing. The USFWS proposed a Delphi study in their original study request and NYSDEC requested a recalculated IFIM study and possible follow-up Delphi study. The material below is being provided as a supplement and modification to our original study request.

The Applicant stated in the PSP that they believe the existing IFIM study is sufficient, in conjunction with additional data being collected during this relicensing, to make flow recommendations at the Projects. This statement is built on the assumption by the Applicant that there have been no significant changes in the downstream reaches in the last 30 years; however, no evidence has been presented to verify this assumption. It is the position of NYSDEC that there is sufficient reason to believe that changes to

downstream reaches could have occurred over the last 30 years. Additionally, the existing IFIM study utilized methods that were generally standard at the time; however, significant advancements in the IFIM method, stream assessment, and modeling techniques have been made since that time.

NYSDEC still recommends the Applicant include a base and bypass reach flow study in the RSP. Flows are one of the central resource issues being evaluated at the Projects, and these studies are needed to assess any changes in flows that may result from this relicensing. It is the position of NYSDEC that IFIM studies should be conducted for each stream below each dam (Toronto, Cliff, Swinging Bridge, Mongaup Falls and Rio) and suggest this quantitative approach be followed by a structured qualitative approach to verify that the goals and objectives of this study are addressed.

NYSDEC recommends that the Applicant verify the adequacy of the existing IFIM study to address the goals and objectives outlined in our original study request. We would recommend that the Applicant verify that the existing channel conditions are statistically similar to those observed in the existing IFIM study. This would involve relocating and resampling a subset of the transects in each reach to be studied. NYSDEC recommends that transects are selected to cover the extent of the reach and the variability within the reach, and then resampled in selected study reaches. NYSDEC recommend that transects be resampled in Black Lake Creek below Toronto Dam, the Mongaup Falls bypassed reach, the Rio bypassed reach, and the Mongaup River downstream of the Rio powerhouse. This will focus sampling on the reaches mostly likely to have changed and/or the most well studied reaches in the existing IFIM study. One of the fundamental underpinnings of an IFIM is the ability to assess available habitat for species and life stages selected by the stakeholders. The Applicant has stated that they are able to do this with the existing IFIM; however, the USFWS and NYSDEC infers that this statement, along with the ability to validate the transect measurements, means that the Applicant is in possession of the raw data for each transect measured for each studied reach. NYSDEC recommends that the availability of this data be verified.

Additionally, NYSDEC recommends that the assumptions and methods in the existing IFIM be updated as needed and compared to current IFIM. This would minimally involve verifying that the habitat suitability index (HSI) curves for the target species are current, but may also involve the recalibration of the wetted surface perimeter (WSP) models and resultant weighted usable area (WUA) curves. NYSDEC recommends that the Applicant thoroughly review the methods outlined in the Instream Flows for Riverine Resource Stewardship (2004) to ensure that the existing data meet current standards for the IFIM.

If the Applicant can show the adequacy of this existing data, the NYSDEC would support its acceptance as a component in the larger data collection effort to negotiate downstream flows at the Projects.

NYSDEC recommends that the Applicant include a placeholder in the study for agency review of the validated existing IFIM study, current fishery and water quality data, and the outputs from the Reservoir Water Level Fluctuation/Operation model to request potential additional study. The results of these studies will largely influence the amount of water available for discussion, any potential changes in target species, and help determine

whether any study to assess potential changes in flow are needed. NYSDEC requests additional study in Black Lake Creek below Cliff Lake, reanalysis of target reaches using the existing IFIM, and/or individual based model for target species, if appropriate.

NYSDEC feels strongly that this study should give the agencies the opportunity to observe the existing minimum flows across all of the affected reaches, and to observe any final proposed flow modifications, if requested.

1. *Goals and Objectives*

The goals and objectives of this study are to determine whether the existing base flow requirements provide appropriate protection for aquatic resources, or whether a different flow regime is necessary.

Flow studies should be conducted to determine whether the existing flows are the appropriate minimum base flows. The base flow studies should be presented in a manner that will allow the regulatory agencies to determine the effect in which the minimum base flow requirements, appearing in the future license and 401 Water Quality Certification, will have on downstream habitat, tailrace habitat, impoundment habitat, and all existing and potentially modified recreational uses of the aquatic resources. NYSDEC recommends a thorough analysis of all available historic survey data and information obtained during biological and geomorphic surveys associated with this relicensing process.

Flow study data should be obtained by either the use of the Delphi approach or the Instream Flow Incremental Methodology (IFIM).

The Applicant should also conduct habitat mapping for the downstream study reach. This mapping should identify the type of habitat in each section (e.g., run, riffle, pool) along with depths, velocities, and substrates. The information will need to be collected and presented in a manner that will allow it to be incorporated into analysis of the current base flow regime. Predicted summer water temperatures during minimum flow and power generation releases through the bypass reach and main stream should be modeled under all proposed release scenarios. This should be done for each stream reach below each of the five dams with a minimum release, all the way to the Delaware River.

2. *Resource Management Goals*

NYSDEC's mission is "*to conserve, improve and protect New York's natural resources and environment and to prevent, abate and control water, land and air pollution, in order to enhance the health, safety and welfare of the people of the state and their*

overall economic and social well-being." The natural resource management goals within the Mongaup River Projects areas, as well as immediately outside of those areas, will be consistent with our mission while focusing on protecting and enhancing fish and wildlife habitat, and improving public access.

3. *Public Interest*

The requestor is a state resource agency.

4. *Existing Information*

The PAD provides no information regarding how the minimum flows required by the current license for Black Lake Creek were developed, nor does it describe the benefits of these flows or the impacts of not having higher flow releases.

A detailed IFIM study was conducted for the Mongaup River during the original licensing. The current flows in the Mongaup River were determined largely by their inclusion by the NYSDEC in the 401 Water Quality Certifications for the Projects, and were greater than the flows proposed by the previous applicant and recommended by the FERC, but less than the flows recommended by the USFWS.

However, the majority of the existing data were collected prior to the implementation of notable operational changes required during the original licensing and throughout the current license (e.g., minimum flows, impoundment level restrictions, decommissioning and installation of powerhouses). Other conditions that have changed considerably since the projects were originally licensed include: recreational uses, opportunities and demands, wildlife habitat, development, power demands, major flood events, and changes to weather and natural conditions. If the applicant provides almost no new data, FERC will not have an adequate factual basis upon which to base a licensing decision or will NYSDEC have sufficient information for conditions in their 401 Water Quality Certification.

The available habitat, fisheries resources, and issues at the Mongaup River Projects have likely changed since the original licensing. The flow releases from these Mongaup River Projects have multiple benefits to a variety of species as well as to water quality, and the appropriate flow regimes will be determined as part of a holistic look at all of the competing issues.

5. *Nexus to Project Operations and Effects*

Operation of the hydroelectric project results in a somewhat variable flow regime downstream from the Project. The existing base flows may or may not provide adequate mitigation for these fluctuations. This study is necessary to determine the appropriate mitigation for these impacts.

6. *Methodology Consistent with Accepted Practice*

The recommended study uses a standard IFIM and Delphi study design that has been used in many hydro licensing activities.

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

The level of effort and cost will be moderate (especially in light of the 30-year length of time that these licenses are written for), and will depend on the details of the implemented studies. The Delphi approach would be less costly than the IFIM process; however, the complexity of the resources and issues involved in this relicensing necessitate a more formal, quantitative study.

E. **Water Quality**

While this study was included in the PSP, multiple areas of concern were noted with the overall plan. We recommend one full year of baseline water quality studies be conducted. Currently, water quality is only proposed to be taken from June through Sept. The streams below all reservoirs in this system provide popular trout fisheries for anglers, and the water quality should be taken year-round to assure proper water quality requirements for trout and other species are met.

NYSDEC recommends that continuous water quality data be collected in the immediate vicinity and at the level of the intakes to evaluate the dissolved oxygen conditions at the intakes related to generation and changes due to continuous minimum flow releases implemented in the original licensing. NYSDEC request that water quality be monitored on a 15-minute interval as generation periods are relatively short during each day, and 1-hour intervals may not adequately capture the variation associated with generation. This should add little cost and effort to the overall study. NYSDEC support FERC's request to collect ambient air temperature to relate to the water temperature data collected in this study. Air temperature data should also be relatively easily collected with little additional cost or effort.

Additionally, methods for mitigating water quality problems (i.e. modifications to infrastructure, or changes to existing operations) should be fully explored and modeled as to their potential effectiveness. Also, these surveys are only scheduled to be conducted during one year with no provision for a second year of surveys. A second year of surveys should be repeated if the resulting data is deemed to be inadequate. This will especially be important since the potential for normal operations might be difficult if construction associated with a minimum flow turbine being installed at Swinging Bridge Reservoir occurs during this study period. Also, the likelihood of capturing the variability of conditions that can exist from year to year is unlikely (or impossible) to capture during only one year of study.

1. *Goals and Objectives*

The goals and objectives of this study are to provide baseline water quality information.

Baseline water quality studies are needed to allow a proper determination of potential project impacts. These studies should include water temperature and dissolved oxygen (DO) on a continuous basis for at least 1 full year, along with monthly sampling of other parameters such a pH, turbidity, and conductivity. An additional year of monitoring may be needed based on a review of the first year's study results. This information will be used to document baseline water quality conditions and to determine potential impacts from the Projects operations. Data should be collected from the impoundments, the by-passed reaches and the areas upstream and downstream from the Mongaup River Projects. Below each of the five impoundments, temperature, flow, and existing water quality information collected in support of issuance of Section 401 Water Quality Certification will need to be summarized in a manner that will allow appropriate analysis of the current flow regime. Methods for mitigating water quality problems (i.e. modifications to infrastructure, or changes to existing operations) should be fully explored and modeled as to their potential effectiveness.

2. *Resource Management Goals*

NYSDEC's mission is "*to conserve, improve and protect New York's natural resources and environment and to prevent, abate and control water, land and air pollution, in order to enhance the health, safety and welfare of the people of the state and their overall economic and social well-being.*" The natural resource management goals within the Mongaup River Projects areas, as well as immediately outside of those areas, will be consistent with our mission while focusing on protecting and enhancing fish and wildlife habitat, and improving public access.

3. *Public Interest*

The requestor is a state resource agency.

4. *Existing Information*

The Applicant has been conducting ongoing water quality monitoring below the powerhouses for all three Mongaup River Projects. This data will continue to be collected during the study period. There are no data available for the bypassed reaches, Black Lake Creek, in the impoundments, or in the tributary streams to the Mongaup River.

5. *Nexus to Projects Operations and Effects*

The existing Mongaup River Projects impounds the Mongaup Creek and its tributaries in multiple locations. These impoundments and releases have the potential to impact such water quality factors as temperature and DO, which are critical to the quality of the aquatic habitat. This is of particular concern during summer with low flows.

The streams below all reservoirs in this system provide popular trout fisheries for anglers.

6. *Methodology Consistent with Accepted Practice*

The recommended study uses standard water quality sampling techniques commonly used in most hydro licensing activities.

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

The level of effort would be low and would involve a crew monitoring continuous measurement devices and collecting monthly samples while undertaking other work such as fisheries or macroinvertebrate surveys. In addition, temperature and DO loggers would be installed, with data being periodically downloaded. The actual cost is unknown but would be relatively low. The existing data for the immediate vicinity of the Mongaup River Projects are limited. Consideration should be given to installing USGS gaging stations below each of the dams for both the short term needs of this study as well as future monitoring.

F. **Wetland Delineation**

The Wetland Delineation was requested by the USFWS and NYSDEC. This study was not adopted by Eagle Creek as a standalone study, but Eagle Creek is proposing to verify National Wetland Inventory (NWI) and NYSDEC mapped wetlands as part of the Aquatic Habitat Mapping Study. NYSDEC is concerned that this dilutes and partially obscures the goals and objectives of the Wetland Delineation. The NYDEC recommends that Eagle Creek separate out the Wetland Delineation from within this larger Aquatic Habitat Mapping Study to provide clarity to the NYSDEC and the FERC regarding what data is being collected and why.

The NYSEC request that the Applicant not only verify the National Wetland Inventory and NYSDEC wetlands within the Projects' boundaries, but also identify any additional wetlands encountered with particular attention to locations where any physical modification to the land throughout the current and future license may be proposed (i.e. Draft Amendment, Public Access, etc.).

1. *Goals and Objectives*

The goals and objectives of this study are to identify key aquatic habitat areas in the Projects vicinity. The study will provide information on the extent and quality of wetlands and aquatic vegetation and the impacts to these habitats by current and future operations.

To clarify terminology, NYSDEC typically considers a "wetland delineation" to be a specific process where qualified individuals on the site in person assess vegetation, soils and physical indicators of hydrology in order to determine the precise location of the wetland's regulatory boundary. The boundary is then physically marked, mapped by a surveyor and placed on project plans. NYSDEC requires a delineation be performed if there is a specific proposal near a wetland regulated by New York State. NYSDEC does not expect that all wetlands within the project area be marked, surveyed and transferred to maps. The NYDEC will require a formal wetland delineation (as defined above) for wetlands located in proximity to any physical land modification to the land proposed throughout the current and future license.

2. *Resource Management Goals*

NYSDEC's mission is "*to conserve, improve and protect New York's natural resources and environment and to prevent, abate and control water, land and air pollution, in order to enhance the health, safety and welfare of the people of the state and their overall economic and social well-being.*" The natural resource management goals

within the Mongaup River Projects areas, as well as immediately outside of those areas, will be consistent with our mission while focusing on protecting and enhancing fish and wildlife habitat, and improving public access.

3. *Public Interest*

The requestor is a state resource agency.

4. *Existing Information*

The PAD provides the National Wetland Inventory (NWI) and NYSDEC delineations of wetlands within the boundaries of the Mongaup River Projects, however, no formal surveys of wetland vegetation or aquatic plants have been undertaken for the Project. Generally, NWI and NYSDEC delineations are not precise enough to capture all regulated wetlands, thus there is a need for wetland vegetation and aquatic plant surveys for these Mongaup River Projects.

5. *Nexus to Project Operations and Effects*

Operation of this Project affects water levels and velocities, as well as the timing and location of releases. These factors can impact aquatic vegetation and wetlands, which can be important habitats for fish and wildlife. The information will be used to determine what, if any, impacts the Mongaup River Projects may have on these resources and what the appropriate protection and mitigation measures might be.

6. *Methodology Consistent with Accepted Practice*

The New York State Department of Environmental Conservation and NWI maps are frequently used as the starting point in delineating wetlands. The NYSDEC expects the Applicant to use techniques commonly accepted by the scientific community.

The applicant should document all wetlands within the Projects vicinity. An accurate analysis of the location and type of freshwater wetland resources is necessary to determine current and future affects to the wetland resources and the wildlife that inhabit them. The NYSDEC and the USFWS's wetland maps were consulted. However, the NYSDEC Freshwater Wetland Regulatory Maps are only intended to show the approximate location of state regulated wetlands and therefore should not be considered a source to characterize the presence of wetland habitat in the hydroelectric project area. Although the USFWS National Wetland Inventory (NWI) is intended to characterize freshwater wetland habitats it is based primarily on remote sensing so that it should be considered a large scale, general and approximate habitat

inventory. The USFWS NWI Maps are not intended to represent federal jurisdiction of wetland areas by the United States Army Corps of Engineers and Environmental Protection Agency. Locations where any physical modification to the land throughout the current and future license terms may require wetland delineations that will need to be field verified. The Applicant should also identify any aquatic vegetation found in the Mongaup River Projects vicinity. This information is necessary to characterize the aquatic habitats in the Mongaup River Projects vicinity.

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

The level of effort and associated costs should be relatively low. Much of the readily available information is already presented in the PAD, and the remaining information can probably be collected during field work related to other studies. No alternative studies have been proposed.

G. **Public Access and Recreation Study**

The Applicant included a Recreation Facility Inventory, Recreation Use and Needs Assessment, and Reservoir Surface Area Assessment Study Plan within Section 11 of the PSP. The NYSDEC largely support the methods in this study with a few important exceptions.

Eagle Creek proposes to conduct a recreation use and needs assessment for the Projects using a combination of methods – spot counts, visitor intercept surveys, and actual use numbers for recreation sites where use numbers are collected. However, the field work for this study is proposed to be conducted only between the months of April 2018 through October 2018. This limited time period does not capture or provide a "snapshot" of winter recreation activities (i.e. Bald eagle viewing, ice/winter fishing, etc.) occurring within the vicinity of the Mongaup River Projects (within 1 mile upstream and downstream of the Project's boundary). Therefore, the NYSDEC requests that the time period in which spot counts are to be conducted at each survey location be expanded to include the winter months (i.e. December 1st – February 28th). This request for expanding to include the winter will result in additional effort, as opposed to only redistributing the same level of effort over a longer period of time.

Similarly, the Draft Recreation User Survey (Figure 11-5 of PSP) should also be revised to include questions regarding activities conducted by users during the winter months. Therefore, the table appearing in Question 11 of the Draft Recreation User Survey should be revised to include winter activities (i.e. ice/winter fishing, skiing, snowshoeing, etc.) and expanded to include a column for winter months. Likewise, the table appearing in

Question 16 in the Draft Survey for Abutting Shoreline Property Owners (Figure 13-1 of PSP) should also be revised.

Recreational Access studies should include an inventory and assessment of current signage at each access point, as well as wayfarer signage along major roads that can alert people of the route to take to each access point. Complaints have been raised that some access sites are not clearly marked, or the routes to find them can be difficult to navigate. The recreational assessment should identify these limitations if they exist and provide suggestions on ways to improve them.

In addition, the NYSDEC requested an evaluation of alternatives for improving access to Cliff Lake Reservoir (i.e. access from other roads, new parking areas, expanded access for shore fishing, etc.) and expansion of stream access below all the Projects (i.e. Public Fishing Rights easements, parking areas, etc.). The NYSDEC agrees with the Applicant that such an evaluation would be considered during the development of the Recreation Management Plan if the recreation study determines that there is a need. Therefore, the NYSDEC is willing to defer this request to Protection, Mitigation, and Enhancement (PME) discussions. However, to prepare for the discussion of alternatives for public access to Cliff Lake in the forthcoming Recreation Management Plan, NYSDEC recommends that specific questions be added to the Draft Recreation User Survey to assess the public interest and potential obstacles associated with current recreational access to Cliff Lake.

1. *Goals and Objectives*

The goals and objectives of this study are to provide information on the existing public access facilities in the vicinity of the Mongaup River Projects (within 1 mile upstream and downstream of the Project's boundary), including the potential to create additional public access where feasible; and to access the current condition of the existing public access facilities and the need for improvements, especially upgrades that would be necessary to ensure the facilities are Universally Accessible and are ADA compliant.

2. *Resource Management Goals*

The NYSDEC's Bureau of Fisheries delivers a diverse program and annually conducts a wide array of activities to accomplish its mission to: "*Conserve and enhance New York State's abundant and diverse populations of freshwater fishes while providing the public with quality recreational opportunities.*"

3. *Public Interest*

The requestor is a state resource agency.

4. *Existing Information*

Section 5.7.3 in the PAD describes the recreational facilities within the Project Boundary and the surrounding area. The Applicant has produced a brochure showing the recreational facilities surrounding the project, but is not required to submit the Licensed Hydropower Development Recreation Report Form 80.

The PSP provides figures depicting the locations of the recreational facilities within Project Boundary and the surrounding area (Figures 11-1, 11-2, and 11-3) and draft forms and draft surveys proposed to be used to collect information (Figures 11-4, 11-5, 12-1, and 13-1) Results of the finalized surveys and the information they provide are forthcoming.

5. *Nexus to Projects Operations and Effects*

The 2014-2019 NYS State Comprehensive Outdoor Recreation Plan (SCORP) was written by the New York State Office of Parks and Recreation and Historic Preservation (NYSOPRHP) and Sullivan County and Orange County, New York is listed as having a moderate to slightly high need for additional fishing, boating, and swimming access as referenced in Table 3.10 (Relative Index of Need) in the SCORP. The Mongaup River Projects utilize a public resource and most licensees are required to provide public access to the extent practicable within constrains of protection of life and property.

The Mongaup Valley has a noted population of bald eagles during both the winter and breeding seasons. The highly visible and accessible annual winter concentration of eagles in the Mongaup River Projects' vicinity from December through March is a valuable recreational asset and has resulted in the installation of multiple viewing blinds and areas by the NYSDEC.

Ice fishing is an allowable use at Swinging Bridge Reservoir and Toronto Reservoir providing opportunities for winter recreation within the project boundaries.

6. *Methodology Consistent with Accepted Practice*

The NYSDEC largely support the methods proposed within the studies with the few important exceptions discussed above (i.e. failure to assess winter recreation activities). The recommended studies use standard 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 field site visits to the existing facilities with the parties of interest and recreational surveys of use as well as investigating the potential to add new access sites. The actual cost is unknown and would depend upon the number of observational and interview surveys to be conducted. The NYSDEC request for additional studies during the winter will result in additional effort, as opposed to only redistributing the same level of effort over a longer period of time The existing literature is inadequate to fully address project impacts, and there are no alternatives to conducting standard recreation surveys. However, the Applicant has flexibility to design the most cost-effective way to acquire the necessary data.

H. **Bald Eagle Management Study**

The Applicant did not include a Bald Eagle Management Study in the PSP based on an opinion that the existing data is sufficient and lack of a project nexus based largely on their general argument that efforts conducted during the original relicensing preclude the need for additional study. The NYSDEC disagrees with these opinions and these issues were largely addressed in our initial study request. In order to clarify the requested study, address updated information in the Supplement, and request additional data needed due to our continued review of the existing data, we have updated our bald eagle study request below. NYSDEC recommend that the Applicant incorporate a bald eagle study that assesses population and winter foraging in the RSP.

1. *Goals and Objectives*

NYSDEC requests that the Applicant conduct a study that will provide information regarding the current winter roosting and nesting locations on and near the Mongaup River Projects. The study should discuss and describe foraging activities of bald eagles in the reservoirs and near the tailraces of the Projects powerhouses. The goals and objectives of this study are to provide current and specific information regarding the bald eagle population and habitat use within the vicinity of the Mongaup River Projects. This study will collect data related to the effects of the Mongaup River Projects on both breeding and winter eagle use of the area. The study will also assess the availability of food resources, specifically entrained alewives and other fish species, for wintering bald eagles and relate this resource availability to eagle foraging activities and winter overnight roost site selection. Information from this study will guide and improve management of this important resource.

This study would involve collecting any existing data from the NYSDEC, and other available sources. NYSDEC recommends conducting 1 additional year of targeted field observations of bald eagle foraging activities in the vicinity of the Mongaup River Projects, noting the location, number of eagles, and identity of food resource, if possible. Additionally, the study would identify, through field observations, important winter overnight roost sites and assess the current forage bases (alewife abundance) in the Mongaup River Projects' reservoirs and the current and projected (with the potential installation of modified intake trashracks) fish entrainment rates as they relate to current and future bald eagle winter use of the area.

The specific objectives of this study are to: 1) provide a map and updated status of all active and inactive bald eagle nest locations at the Projects; 2) provide maps of winter population and foraging areas and an estimate of the winter population of bald eagles at the Projects; 3) provide a detailed table of counts of bald eagle foraging activity by forage species/size by location and a figure of foraging activity for areas below each powerhouse in relation to generation at the Projects; 4) provide an analysis of the relationship of the observed winter forage activity in context of the fish entrained through the Projects and project operations; and 5) a detailed table of the current number of individuals of fish species by size entrained through the Projects in the winter months.

2. *Resource Management Goals*

NYSDEC's mission is "*to conserve, improve and protect New York's natural resources and environment and to prevent, abate and control water, land and air pollution, in order to enhance the health, safety and welfare of the people of the state and their overall economic and social well-being.*" The natural resource management goals within the Mongaup River Projects areas, as well as immediately outside of those areas, will be consistent with our mission while focusing on protecting and enhancing fish and wildlife habitat, and improving public access.

Bald eagles are a protected species under federal and State law. The Mongaup Valley has a noted population of bald eagles during both the winter and breeding seasons. The highly visible and accessible annual winter concentration of eagles in the Mongaup River Projects' vicinity from December through March is a valuable recreational asset and has resulted in the installation of multiple viewing blinds and areas by the NYSDEC.

3. *Public Interest*

The requestor is a state resource agency.

4. *Existing Information*

The PAD provides some information bald eagles generally, but no site-specific information on nesting, winter roosting, or feeding activity is presented. One of the stated goals of the 1992 entrainment study during the last relicensing was to evaluate the availability of entrained alewife for winter feeding of bald eagles. There is no current information related to the importance of this resource to the bald eagles in the vicinity of the Projects.

The Supplement provides winter population estimates by the NYSDEC and Delaware Highland Conservancy (DHC). The NYSDEC winter bald eagle counts in the Mongaup River System extend from 1978-2010 and show an increasing population since reintroduction efforts in the late 1970s with a jump from 25 to 80 bald eagles from 2009 to 2010. The DHC collected weekend-only counts by trained volunteers of observations of bald eagles from 2014 to 2017 at the Mongaup Falls and Rio bald eagle viewing areas. These data show a decline from 1150 observations in 2014 to 200 observations in 2015 and a steady increase to 850 observations in 2017. Data is only provided for Mongaup Falls and Rio separately in 2014 and 2015, but Mongaup Falls had relatively more observations than Rio. It appears that this most recent data has only been collected at the publicly provided viewing areas, and no data is provided for other areas at the Mongaup Falls or Rio Projects or at the Swinging Bridge Project. The existing data does not allow for an evaluation of winter foraging activity in relation to the Projects' operations as there is no data for other foraging areas or activity at the Projects.

The Applicant has provided data from the *1992 –1993 Entrainment Studies: Mongaup Hydroelectric Projects* in the Supplement. The stated goal of this study was to evaluate the availability of entrained alewife for winter feeding of bald eagles. USFWS have noted the deficiencies of this study in detail in their original study request letter. Despite issues with sampling efficiency, study design, and data analysis, this study did show that alewife (*Alosa pseudoharengus*) was the most abundant species entrained through the Projects in the winter months and that these individuals were typically less than 10 cm in length. Additional anecdotal evidence suggests that the open water in the winter months and the alewife forage base entrained through the Projects are the primary reasons for the notable winter bald eagle population at the Projects. Actual data regarding the foraging activities of bald eagles at the Projects, and the degree to which they feed on entrained fish and alewife, in particular, do not exist.

If wintering bald eagles are found to be foraging on potentially entrained fish species that are primarily not alewife, then an updated winter entrainment study may be

needed. The general conclusions of the original entrainment study may be incorrect and/or entrainment rates may have changed at the Projects since the original licensing. It appears that changes at the Projects since the original entrainment study such as the implementation of minimum flows (i.e. intake conditions, mortality through release structures), changes in powerhouse operation (e.g., decommissioning of Unit 1 at Swinging Bridge, minimum flow powerhouse at Rio), and any changes in the fishery over time may have changed winter species-specific entrainment rates at the Projects. Additional data regarding the species currently entrained through the Projects that are potential forage for the wintering bald eagle population at the Projects would be needed.

5. *Nexus to Projects Operations and Effects*

The Projects entrain fish that have been anecdotally noted as a primary forage source for bald eagles in the vicinity of the Projects. Therefore, any mitigation measures related to fluctuations and entrainment may influence this protected species. Additional information is required in order to determine what effects fish passage and protection measures may have on fish entrainment (see Section IV.C: Fish Protection, Upstream and Downstream Passage Studies above) and additional information in order to determine what impacts these measures may have on the winter bald eagle populations at the Projects.

Activities (e.g., tree clearing, maintenance activities, recreation enhancements) conducted by the Applicant may cause 'take' of bald eagles if these activities occur in the vicinity of nesting, roosting, or feeding individuals. In order to prevent any 'take' during the course of the license, the Service will coordinate with the Applicant to develop a management plan for the protection of the bald eagle population at the Projects to be incorporated into the new license. The development of this management plan will require a current assessment of the bald eagle population at the Projects. The NYSDEC may recommend particular measures based on the location of particular nesting locations and areas of highest concentration of eagles.

6. *Methodology Consistent with Accepted Practice*

The NYSDEC recommends the following methodologies, consistent with standard avian survey, forage activity, and entrainment study methods found in the literature in other FERC relicensings, for this study by the objective noted above:

Objective 1: a) collect all available data from the NYSDEC and the DHC regarding eagle active and inactive bald eagle nest locations in the vicinity of the Projects; b) conduct one field season of study during the nesting season (December 1 through

June 30) to identify the location and status (present/absent, active/inactive) of all nests in the vicinity of the Projects utilizing visual surveys. NYSDEC recommends that the Applicant follow the protocols found in the USFWS's *Bald Eagle Management Guidelines and Conservation Measures.* NYSDEC is not recommending aerial surveys or fledgling population estimates at this time due to the cost and risk for take during these methods; however, any observations of eagles during this survey should also be recorded and provided in the Study Report with other special status species survey results; c) prepare a map and summary of nest locations in the vicinity of the Projects symbolized by status.

Objective 2: a) conduct one field season (January – February) of observation of winter bald eagle activity in the impoundments, tailraces, and downstream areas of the Projects. NYSDEC recommends that this survey be conducted for two total weeks across both months of survey and that daily survey routes be followed to cover all areas across the Projects each day; b) counts and locations of observations of bald eagles should be recorded indicating whether or not feeding/foraging activities were occurring; c) prepare maps of the winter population (per survey effort per location) and winter activity of bald eagles at the Projects by plotting and interpolating the density of observations of bald eagles for all activity and for feeding/foraging activity, separately.

Objective 3: a) conduct one field season (January – February) of observations of all bald eagle foraging activity by forage species/size across all of the Projects; b) observations of all forage species should be recorded regardless of taxonomic identity, but general categories are acceptable (e.g., fish, mammal, bird). For fish species, we recommend collecting additional data related to species identity, especially for alewife, if possible, but estimates of the size of fish are needed. We recommend intervals of sizes be recorded (e.g., 0 – 5 cm, 5 – 10 cm, 10 – 20 cm, 20 – 50 cm); c) NYSDEC recommends a staggered approach to this methodology. Any incidental observations of forage species should be noted during the two weeks of survey for Objective 2, as described above. While unlikely, if all or nearly all foraging activity is not associated with areas near or immediately downstream from the Projects' powerhouses, bald eagles are likely not using entrained fish as a forage base and further study may not be required, if determined by the NYSDEC; c) otherwise, NYSDEC recommends this study continue for an additional week immediately following each survey week for Objective 2, focusing specifically on forage species in areas identified as the highest concentrations of eagle activity; d) Observations of bald eagles during these times can be added to the population estimate for Objective 2 for these locations; e) NYSDEC recommends observations during the week of focused survey be collected on a continuous basis at each location surveyed during this period. Project generation should be noted for each location associated with a

downstream area from any Project's powerhouse; f) prepare a detailed table of counts of bald eagle foraging activity by forage species/size by location; g) prepare a figure of foraging activity for any surveyed areas below a Project powerhouse in relation to generation across the days surveyed

Objective 4: a) provide an analysis of the relationship of the observed winter forage activity in context of the fish entrained through the Projects and project operations; b) The NYSDEC recommends that this analysis fully incorporate the data and results from Objectives 2 and 3.

Objective 5: a) The NYSDEC also recommends a staggered approach to this Objective. If NYSDEC determines that the analysis in Objective 4 supports the general conclusion from the original entrainment study, in that all or nearly all of the forage fish species recorded below the Projects' powerhouses are alewife, generally less than 10 cm in length, then the NYSDEC believes that the existing information is sufficient for analysis of entrainment effects on the foraging activity of bald eagles at the Projects; b) otherwise, the NYSDEC recommends that the Applicant conduct an updated study of winter entrainment at the Projects, in consultation with the USFWS and the NYSDEC; c) this study may be a desktop analysis of entrainment, if survey data for the winter fishery population is sufficiently robust as determined by the USFWS and the NYSDEC; d) otherwise, the NYSDEC recommends that the Applicant conduct a field-based study; e) this study may employ net-capture methods, radio tagging, or any other method approved by the agencies, but we recommend that any method must have a collection efficiency of >80%, be conducted under the full range of conditions (minimum flow release, one to four turbine generation (as applicable)), and be conducted across multiple days during the peak foraging season (January – February) at each location.

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

The cost and level of effort will likely be low. Objective 1 will require two to four weeks for one to two trained biologists to gather data, conduct surveys, and prepare a map and summary. Objectives 2 – 4 will require two to four trained biologists four weeks for surveys and three to five weeks for data analysis and report preparation. The cost and effort of Objective 5 will depend on the methods employed but could range from low cost and effort for one to two weeks and one biologist to conduct a desktop analysis of entrainment based on other data collected in the fisheries surveys to relatively high cost and effort involving a small team of biologists developing and conducting a field-based entrainment study and preparing reports over several months to a year.

The FERC submitted a study request for Special-status Wildlife Species and Habitat Assessment, which the NYSDEC supports. Objective 1 of this study request is complimented by this larger request from the FERC, and we provide more detail regarding bald eagles in our request with a similar expectation of effort during the breeding season. The Applicant has proposed to collect incidental observations and document encountered bald eagle nest locations during the summer and fall. However, this survey effort would largely occur outside of the nesting season (December 1 through June 30) and as proposed may exclude known nesting locations. Objective 2 may additionally be complimented by the FERCs request. The FERC references that bald eagles may use all five reservoirs during the winter months, but does not clarify the amount of effort required to evaluate the status of the winter population or whether the existing information is sufficient. The Applicant has proposed not to survey bald eagles in the winter months. No alternative studies have been proposed to address winter foraging and the relationship to entrainment as requested in Objectives 3 – 5. The data collected for Objectives 3 – 5 will necessarily provide the data for Objective 2 based on our recommended methodology.

I. Impoundment Fluctuation Studies

The Applicant has proposed this study to address study requests by multiple stakeholders, as well as the FERC. The NYSDEC generally supports this study. NYSDEC note that the Applicant included study requests to look at the impacts of the Projects on the Delaware River through gauge data; however, they are only proposing to look at flows, and did not identify which gauges would be used. The National Parks Service (NPS) requested the Applicant also evaluate temperature data, as available, in the Delaware River, and we recommend these data be included in this analysis. Additionally, the presentation of this data may require more than a single plot. NYSDEC recommends linking project generation to changes in streamflow in the Delaware River that looks at percentage of flow and amount of daily variation resulting from project operations. Lastly, the NYSDEC requested a log of scheduled release dates compared to actual releases to evaluate the impacts of changes in release schedules on the Delaware River.

NYSDEC also recommend that the table to be developed with volumes released from the reservoirs in a typical year include data for the volumes released for whitewater releases and show a range of generation volumes including low, typical, and high generation years.

As part of the Impoundment Fluctuation Studies, NYSDEC requested the identification of the extent of the changes in, and adjacent to, the impoundment areas, substrate and type of habitat, the depth at various pond levels, and any important habitat types (i.e., wetlands and submerged aquatic vegetation) that may be present. However, Eagle Creek is proposing to conduct a combination of field surveys and desktop analysis to identify and map aquatic habitats within the Projects' reservoirs fluctuation zones as part of the

Aquatic Habitat Mapping Study. NYSDEC is concerned that this dilutes and partially obscures the goals and objectives of the Impoundment Fluctuation Studies. The NYDEC recommends that Eagle Creek separate out the habitat mapping element of the Impoundment Fluctuation Studies from within this larger Aquatic Habitat Mapping Study to provide clarity to the NYSDEC and the FERC regarding what data is being collected and why.

The Applicant proposed in the PSP to opportunistically survey the shoreline habitat of the reservoirs based on water levels. NYSDEC notes that the Applicant has incorporated our comments from the Study Planning Meeting to use additional techniques that do not require a full reservoir drawdown to acquire these data in the Supplement. NYSDEC looks forward to this addition in the RSP.

The NYSDEC is concerned that the period of observation has been proposed to be limited to summer and fall. Reservoir levels vary dramatically over the course of the year, and NYSDEC encourages the applicant to sample over a whole year, at different reservoir levels, with multiple sampling techniques, to obtain the data needed to address the goals and objectives of this study.

The Service recommended that the Applicant identify erosional areas within the impoundments as part of our study request. Please incorporate this data into the study plan.

1. *Goals and Objectives*

   The goals and objectives of this study are to provide information regarding the habitat in the impoundments and how it is impacted by changes in water levels. This information will then be used to determine what impacts need to be addressed and whether an alternative operational mode may be more desirable.

   The NYSDEC recommends that the Applicant conduct an impoundment fluctuation study. This study will assist in the determination of what fish and wildlife resources are being impacted and to what degree. The study should consist of mapping the aerial extent and habitat in the fluctuation zones at full pond and at drawdowns consistent with Project operations. The maps should identify the extent of the changes in, and adjacent to, the impoundment areas, substrate and type of habitat, the depth at various pond levels, and any important habitat types (i.e., wetlands and submerged aquatic vegetation) that may be present. Steep slopes, fluctuations in stream flow, and fluctuations in reservoir elevations can lead to mass movement, and we recommend that eroding or potentially erodible areas within the fluctuation zone be evaluated and included in the maps.

The NYSDEC recommend that the Applicant study the range of flow releases evaluated in the flow studies in relation to the potential for impoundment fluctuations at the Projects. This would involve deriving a calculation of storage at the Mongaup River Projects at different depths and the degree to which different flow releases can be maintained at differing starting elevations. Estimates should be quantitative and based on million gallons per day estimates of the releases in relation to total storage. This would be an extension of the current draft operating plan.

The NYSDEC recommends that the Applicant prepare a consolidated figure or table that presents all of the relevant elevations for Mongaup River Project operations. This figure or table should include the dam crest, maximum and minimum fluctuation ranges, any intake/outlet gate inverts (and height), any required seasonal limitations on fluctuations and their duration, and the target elevations proposed by the Applicant and their duration.

In addition, the NYSDEC recommends that the Applicant develop a table or chart that clearly shows the volume released from each reservoir (i.e. Cliff Lake, Toronto Reservoir, and Swinging Bridge Reservoir) to meet the minimum flow target over the course of the year compared to the amount released for generation on a typical year. This should also be modelled to show the range of likely operations during high and low power demand years. Ideally these volumes would be graphically represented to show how they relate to vertical drawdowns in each waterbody. This could also be done to account for typical high and low water years.

2. *Resource Management Goals*

NYSDEC's mission is "*to conserve, improve and protect New York's natural resources and environment and to prevent, abate and control water, land and air pollution, in order to enhance the health, safety and welfare of the people of the state and their overall economic and social well-being.*" The natural resource management goals within the Mongaup River Projects areas, as well as immediately outside of those areas, will be consistent with our mission while focusing on protecting and enhancing fish and wildlife habitat, and improving public access.

3. *Public Interest*

The requestor is a state resource agency.

4. *Existing Information*

The PAD provides information related to the maximum and target fluctuation levels of the Projects. Additionally, there is a draft operations plan that provides information related to refill rates based on seasonal targets in reservoir elevations. There are no data provided regarding habitat within the impoundments that may be affected by the Projects operations.

5. *Nexus to Projects Operations and Effects*

The Projects operate in a ponding fashion and large fluctuations occur in the reservoirs that impact shoreline habitats in the vicinity of the Projects. Additionally, this comparison should help to put into perspective some of the public concerns that the existing minimum flow releases are the bulk of the reason for the drawdown elevation dropping significantly at times.

The Mongaup River Projects have large maximum and target fluctuation ranges. These fluctuations create a zone around the impoundment shoreline that is periodically dewatered. The habitat in this zone is usually not as valuable to aquatic organisms and plants as the habitat with more constant water levels. These fluctuations can impact wetlands and shallow littoral vegetation, as well as the invertebrates, fish, birds, mammals, amphibians, and reptiles that use these habitats.

6. *Methodology Consistent with Accepted Practice*

The recommended study uses standard study techniques used in many hydro licensing activities at projects with ponding operations.

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

The level of effort would be moderate and would involve one crew surveying the impoundments as well as the preparation of a desktop analysis of the effect of different elevations on habitat and flows on elevations. The actual cost is unknown but would depend on the variety of habitats found in the impoundments.

Foregoing Studies in Lieu of Protection, Mitigation, and Enhancement Measures

Under the Integrated Licensing Process being used for this relicensing, the Licensee is required to file and have approved by the Federal Energy Regulatory Commission a formal Study Plan. As such, there may be an opportunity to reduce some of these studies in scope, or even forgo some of them, if agreements can be reached up front regarding certain Protection, Mitigation, and Enhancement (PME) measures. The New York State

Re: Rio Hydroelectric Project (FERC No. 9690)
Mongaup Falls Hydroelectric Project (FERC No. 10481)
Swinging Bridge Hydroelectric Project (FERC No. 10482)

Comments on Proposed Study Plan

Department of Environmental Conservation recommends that the Applicant convene a meeting with the stakeholders prior to developing the Revised Study Plan to determine which studies could be reduced or eliminated in return for agreements to proceed with certain PME measures.

The Revised Study Plan developed by the Applicant should incorporate all of the above-listed studies. The study proposals incorporated into the Revised Study Plan should 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 Proposed Study Plan and further clarify our study requests. If you have any questions or desire additional information, please contact me at (845) 256-3040.

Sincerely,

Joseph R. Murray
Environmental Analyst 1
joseph.murray@dec.ny.gov

ecc: John Petronella, NYSDEC
Mike Flaherty, NYSDEC
Mike DiSarno, NYSDEC
Brian Drumm, NYSDEC
Nate Ermer, NYSDEC
Jon Binder, NYSDEC
John Wiley, USFWS
Kevin Mendik, NPS
Quinn Emmering, FERC

E-file Submission

January 10, 2018

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

Subject: Swinging Bridge Hydroelectric Project (FERC No. P-10482-117)
Mongaup Falls Hydroelectric Project (FERC No. P-10481-067)
Rio Hydroelectric Project (FERC No. P-9690-112)
Revised Study Plan

Dear Secretary Bose:

Eagle Creek Hydro Power, LLC, Eagle Creek Water Resources, LLC, and Eagle Creek Land Resources, LLC (collectively "Eagle Creek") are the owners and operators of the Swinging Bridge, Mongaup Falls, and Rio Hydroelectric Projects (collectively “Mongaup River Hydroelectric Projects” or “Projects”). The Mongaup River Hydroelectric Projects are located on the Mongaup River in Sullivan and Orange Counties, New York, and are licensed by the Federal Energy Regulatory Commission (“FERC” or “Commission”).

The FERC licenses for the Mongaup River Hydroelectric Projects expire on March 31, 2022, and Eagle Creek is pursuing new licenses for each of the Projects. On March 30, 2017, Eagle Creek filed with FERC Notices of Intent (NOIs) to file a license application for new licenses for the Projects. Consistent with the Commission’s Integrated Licensing Process (ILP) and 18 CFR §5.13, Eagle Creek is filing the Revised Study Plan (RSP) with the Commission.

The studies presented in the RSP have been developed based on comments, study requests, and consultation associated with the Proposed Study Plan (filed with the Commission on September 12, 2017); the Proposed Study Plan Meeting (performed on October 4, 2017); consultation with the Commission, U.S. Fish and Wildlife Service, and New York State Department of Environmental Conservation (performed on November 9, 2017); and supplemental study scoping information (filed with the Commission on December 1, 2017).

Eagle Creek Renewable Energy, LLC
116 North State Street, PO Box 167, Neshkoro, WI 54960-0167 USA
www.eaglecreekre.com

Based on the aforementioned comments, study requests, and consultation, Eagle Creek has proposed the following fourteen studies in the RSP:

1. Reservoir Water Level Fluctuation/Operation Model Study;
2. Aquatic Habitat Assessment Study;
3. Fisheries Survey Study;
4. Fish Entrainment/Impingement Study;
5. Water Quality Study;
6. Macroinvertebrate and Mussel Survey;
7. Recreation Facility Inventory, Recreation Use and Needs Assessment, and Reservoir Surface Area Assessment Study;
8. Whitewater Boating Assessment Study;
9. Shoreline Management Assessment Study;
10. Cultural Resources Study;
11. Black Brook Dam Decommissioning Study;
12. Special-Status Species Survey Study;
13. Bald Eagle Management Study; and
14. Bypass/Base Flow Transect Evaluation Study

In accordance with 18 CFR §5.13(b), resource agencies, Indian tribes, and other interested parties may file revised information or study requests with the Commission on or before January 25, 2018.

In addition to filing a copy of the RSP with the Commission, Eagle Creek is distributing this cover letter to the parties listed on the distribution list in Appendix A of the RSP. For parties listed in Appendix A who have provided an email address, Eagle Creek is distributing this cover letter via email, otherwise Eagle Creek is distributing this cover letter via mail.

A copy of the RSP may be obtained electronically through FERC's eLibrary system at https://elibrary.ferc.gov/idmws/search/fercgensearch.asp under docket numbers P-10482, P-10481, and P-9690. In addition, a copy of the RSP may be obtained through Eagle Creek's website at www.eaglecreekre.com/mongaup-river-relicensing. If you would like to request a CD containing a copy of the RSP, please contact Jane Manibusan with Eagle Creek at (920) 293-4628 (ext. 318) or jane.manibusan@eaglecreekre.com.

If there are any questions regarding this letter or the RSP, please do not hesitate to contact Michael Scarzello with Eagle Creek at (973) 998-8402 or Jim Gibson with HDR at (315) 414-2202.

Sincerely,
Eagle Creek (Licensees)

Michael J. Scarzello
Regulatory Director

Enclosure: Revised Study Plan

From: Jane Manibusan
Sent: Wednesday, January 10, 2018 2:16 PM
To: Charlie Barbuti, Town of Liberty <c.bartuti@townofliberty.org>;
Subject: Mongaup River Projects-Revise Study Plan

Good Afternoon,

Attached is a copy of the transmittal letter for the Revised Study Plan (RSP) that has been filed with the Federal Energy Regulatory Commission (FERC) in support of relicensing the Swinging Bridge, Mongaup Falls, and Rio Hydroelectric Projects (collectively the Mongaup River Hydroelectric Projects). Given that our contact database includes your email address, we are providing a copy of this letter via email, in lieu of a direct mailing. If you would like to receive paper copies of future letters, as compared to emails, please contact Jane Manibusan with Eagle Creek at (920) 293-4628 (ext. 318) or jane.manibusan@eaglecreekre.com.

Note that the transmittal letter provides instructions as to how to obtain a copy of the RSP from FERC's eLibrary system at https://elibrary.ferc.gov/idmws/search/fercgensearch.asp and from Eagle Creek's website at www.eaglecreekre.com/mongaup-river-relicensing. If there are any questions regarding this email, the attachment, or the RSP please do not hesitate to contact Michael Scarzello with Eagle Creek at (973) 998-8400 or Jim Gibson with HDR at (315) 414 2202.

Thank You;
Jane Manibusan, Compliance Associate/Librarian
EAGLE CREEK RENEWABLE ENERGY LLC
jane.manibusan@eaglecreekre.com
Office 920-293-4628 ext. 318
Fax 920-293-8087
Cell 920-273-5390

From: Jane Manibusan [mailto:Jane.manibusan@eaglecreekre.com]
Sent: Wednesday, January 10, 2018 5:20 PM
To: supervisor@townofliberty.org
Subject: FW: Mongaup River Projects-Revise Study Plan

Several attempts to assure that the Town of Liberty is aware., Data File we have attn.: Charlie Barbuti and returned. Please forward to appropriate Dept.

From: Jane Manibusan
Sent: Wednesday, January 10, 2018 3:44 PM
To: 'c.barbuti@townofliberty.org' <c.barbuti@townofliberty.org>
Subject: FW: Mongaup River Projects-Revise Study Plan

From: Brian P. Rourke, Supervisor [mailto:supervisor@townofliberty.org]
Sent: Thursday, January 11, 2018 3:13 PM
To: Jane Manibusan <Jane.manibusan@eaglecreekre.com>
Cc: k.poley@townofliberty.org
Subject: RE: Mongaup River Projects-Revise Study Plan

Hello:

Charlie Barbuti is no longer in office. You have reached me, the new Supervisor. I am not familiar with this project yet. Please feel free to share a synopsis with Keri Ann and me. Thank you.

Brian P. Rourke, Supervisor
Town of Liberty
Town of Liberty Government Center
120 North Main Street
Liberty, NY 12754
supervisor@townofliberty.org
www.townofliberty.org

(845) 292-5111 Phone

United States Department of the Interior

NATIONAL PARK SERVICE
NORTHEAST REGION
15 State Street
Boston, Massachusetts 02109-3572

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

Non-ER
January 19, 2018
Filed Electronically

RE: Rio Hydroelectric Project (FERC No. P-9690-112)
Mongaup Falls Hydroelectric Project (FERC No. P-10481-067)
Swinging Bridge Hydroelectric Project (FERC No. P-10482-117)
Comments on Revised Study Plan

Dear Secretary Bose:

Dear Ms. Bose:

The U.S. National Park Service (NPS) has reviewed the January 10, 2018, *Revised Study Plan* (RSP) submitted by Eagle Creek Hydro Power, LLC, Eagle Creek Water Resources, LLC, and Eagle Creek Land Resources, LLC, collectively referred to as Eagle Creek Hydro (Applicant) for the Rio (FERC No. 9690-112), Mongaup Falls (FERC No. 10481-067), and Swinging Bridge Hydroelectric Projects (FERC No. 10482-117). The three projects, collectively known as the Mongaup River Hydroelectric Projects (Project or Projects), are located on the Mongaup River in Sullivan and Orange Counties, New York. The NPS originally provided study requests in our July 24, 2017, letter to the Applicant. We additionally provided updated study requests and comments on the Applicant's September 12, 2017, *Proposed Study Plan* (PSP) in our December 11, 2017 letter filed with the Federal Energy Regulatory Commission (FERC).

NPS Requested Studies Not Addressed in the RSP

In our comments on the Pre-Application Document (PAD) filed with the FERC on July 24, 2017, the NPS requested specific studies needed to assess potential impacts on resources and values that the NPS in charged with stewardship of under the Wild and Scenic Rivers Act (WSRA 16 USC 1278). The applicant's PSP did not adequately address the NPS' proposed Flow Study. Our December 11, 2017 comments on the PSP have also not been adequately addressed in the Revised Study Plan (RSP). Therefore, the NPS reiterates both our July 24, 2017 and December 11, 2017 filings.

This reach of the Delaware River, designated by Congress as part of the National Wild and Scenic Rivers System, was established to protect articulated Outstandingly Remarkable Values (ORVs) that include exemplary ecological, recreational, and water quality resources (as referenced in our July 24 and December 11, 2017, comments to FERC).

As the least-developed section of the last major river on the Atlantic Coast undammed the length of its main stem, the Upper Delaware River exhibits some of the highest ecological integrity found in any of the large rivers of this region. The flow study requested by NPS is well-justified as a means of better understanding potential impacts of Rio Reservoir operations on resulting flow and habitat conditions in this section of the river.

In our December 11 comments, the NPS suggested that the Applicant convene a meeting with the stakeholders to determine which studies could be reduced or eliminated in return for agreements to proceed with certain PME measures. The NPS continues to support such a meeting for the benefit of all stakeholders.

Questions or comments should be addressed to Kevin Mendik at kevin_mendik@nps.gov or Don Hamilton at don_hamilton@nps.gov.

Sincerely,

Kevin Mendik
NPS Northeast Region
Hydro Program Manager

From: jkrueger@frontiernet.net [mailto:jkrueger@frontiernet.net]
Sent: Monday, January 22, 2018 9:53 AM
To: Jane Manibusan <Jane.manibusan@eaglecreekre.com>
Cc: waldenbi@hvc.rr.com
Subject: Fw: Address -email request

Good Morning Ms. Manibusan,

My name is Jim Krueger and I am the new President of the Iroquois Hunting & Fishing Club, Inc.

As requested,

My mailing address is: James W. Krueger, 21 Eldred Road, White Lake, NY 12786
My email address is: jkrueger@frontiernet.net

Our Treasurer is: Stephen Sudol
His mailing address is: 24 Breezy Point Road, White Lake, NY 12786

Let me know if there is any further information you may require,

Jim Krueger
President
Iroquois Hunting & Fishing Club, Inc.

C

UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Eagle Creek Renewable Energy	Swinging Bridge Hydroelectric Project (No. 10482)
Application for New License	Mongaup Falls Hydroelectric Project (No. 10481)
	Rio Hydroelectric Project (No. 9690)

AMERICAN WHITEWATER, APPALACHIAN MOUNTAIN CLUB, AND KAYAK AND CANOE CLUB OF NEW YORK COMMENTS IN RESPONSE TO REVISED STUDY PLAN FOR THE MONGAUP RIVER HYDROELCTRIC PROJECTS (FERC PROJECT NOS. P-10482, P-10481, AND P-9690)

American Whitewater (AW), Appalachian Mountain Club (AMC), Kayak and Canoe Club of New York (KCCNY) submit the following comments in response to the Revised Study Plan filed by Eagle Creek Renewable Energy for the Mongaup Hydroelectric Projects. We incorporate by reference our comments and study request submitted on July 28, 2017 (FERC Accession No. 20170728-5107), as well as our December 11, 2017 comments on the Licensee's Proposed Study Plan (FERC Accession No. 20171211-5092). The Licensee's Revised Study Plan fails to address any of the comments and concerns raised by our stakeholder groups in our comments submitted in response to the Proposed Study Plan. Instead, the Licensee seeks to avoid properly studying the project impacts on whitewater boating in the bypassed reach or the adequacy of the current whitewater release schedules, facilities and information in the hope of avoiding mitigation for project impacts. We resubmit our previously submitted comments below and request that FERC issue a Study Plan Determination to adequately address the deficiencies in the Licensee's Revised Study Plan relating to whitewater boating opportunities in the project area that are adversely impacted by project operations.

Under the current FERC license, a continuous minimum flow of 100 cfs or less is released into the bypassed reach, altering the natural hydrology by substituting an artificial steady state habitat for the natural flow regime and eliminating naturally variable flows. The project rarely spills into the bypassed reach above the required minimum flows. There is a minimum flow turbine in the bypassed reach. The project penstock leads to a 10 MW powerhouse containing two turbines each capable of releasing 435 cfs into the Mongaup River below the project. Eagle Creek is required to schedule generation to provide weekend whitewater releases on 15 days annually between April 15-October 31, alternating between 435 cfs (one turbine) and 870 cfs (two turbines) for four hours every other week during this period.

Whitewater Boating Study

- AW/AMC/KCCNY Study Requests

Our organizations submitted a timely request for a controlled-flow whitewater boating study in the natural river channel (bypassed reach) below the Rio Dam. We are seeking to determine whether the bypassed reach has the potential to provide a high-quality whitewater boating experience once sufficient flows are provided. In addition, we requested that the Licensee study

the adequacy of the existing recreational releases on the reach between the Rio powerhouse and the confluence with the Delaware River. Our study request sought the following goals & objectives:

- Assess the effects of a range of optimal and acceptable flows on whitewater recreation opportunities for whitewater paddling in the natural river channel, including the bypassed reach, from the Rio Dam to the confluence of the Mongaup River with the Delaware River;
- The frequency, timing, duration and predictability of optimal and acceptable paddling flows under current, proposed, and alternative modes of operation;
- Identify the need for, and define adequate put-in and take-out points that promote car-top boating, and also identify the needs for parking areas;
- The location, challenge, and other recreational attributes associated with specific rapids and other river features;
- The access needs of whitewater boating use and the current and potential river access options for whitewater and other paddling;
- The flow information needs of whitewater boating and the current and potential flow information distribution system.

Our stakeholder groups requested that the Licensee study existing and potential future opportunities for whitewater boating on two sections of the Mongaup River in the Rio development: 1) Rio bypassed reach between the Rio Dam and the project tailrace, and, 2) below the tailrace and the confluence with the Delaware River.

The 1.5-mile long bypassed reach below the Rio Dam drops approximately 84 feet, or approximately 56 feet per mile. When combined with the 3-mile long lower reach below the powerhouse, the 4.5-mile reach from the dam to the Delaware would provide a high-quality whitewater boating opportunity with sufficient flow, as the Licensee acknowledges that the gradient in the bypassed reach is similar to the gradient of the lower Mongaup reach below the Rio Project tailrace. The Rio project profoundly alters the natural hydrology in the bypassed reach, creating an artificial steady state habitat through the release of 100 cfs or less from the minimum flow powerhouse. Missing is all of the natural variability that would be present in the river but for the project flow alteration, including spring freshet high flows and periodic pulses following significant rain events. Also missing is all recreation boating opportunity, as 100 cfs fails to provide a sufficient boating flow.

Our organizations, FERC, and other stakeholders are requesting a controlled flow whitewater boating study in the bypassed reach to determine the minimum acceptable and optimal boating flows. The gradient of this reach as compared to the lower Mongaup suggests that flows between 500 and 1500 cfs may be in the range of boatable flows, with flows in the higher range likely providing a better boating experience; however, the only way for FERC, stakeholders and the Licensee to determine the most appropriate boating flows is to conduct a controlled flow study following well establish protocols as articulated by Whittaker, *et al.*

In response to the study requests by FERC, our organizations, and other stakeholders, the Licensee purports to “study” the whitewater boating potential of the bypassed reach by

conducting a literature review and surveying boaters. Given that the Licensee has spilled flows in excess of the 100 cfs minimum flow perhaps once in the past decade after Hurricaine Irene, it is unclear who the Licensee plans to survey to determine the boating potential of this reach. Furthermore, neither the American Whitewater rivers database nor any other guidebooks of which we are aware contain any description of the flows, features, or difficulty of the bypassed reach. As such, the Licensee's "proposed study plan" will provide no more useful information than could be obtained by reviewing Google Earth imagery.

The Licensee states the following in response to requests by American Whitewater and other stakeholders for an on-water controlled flow study following the Whittaker, *et al*. protocols:

> AW/AMC/KCCNY requested a controlled flow whitewater boating assessment, including multiple on water-flow assessments. The Licensee is not proposing to conduct an on-water controlled flow evaluation at this time as the need for such is dependent on the results of this assessment.

While a desktop analysis is an initial step in the Whittaker *et al*. protocol, we already know that the reach between the dam and the powerhouse is a viable reach of reasonable difficulty and presumed value with recreational unknowns that require on water studies.

The Proposed Study Plan fails to elaborate on how its supposed literature review or its structured interviews of boaters who are unable to boat on the bypassed reach due to a lack of flows will somehow inform the need for an on-water boating assessment. What limited anecdotal information is available from 2011 suggests that the reach is boatable when there is sufficient spill, but there is insufficient information to determine minimum acceptable and optimal boating levels among a range of skill levels from novice to expert and a range of watercraft including, kayaks, canoes, cataraft, and SUP.

In *Flows & Recreation: A Guide to Studies for Recreation Professionals*, Whittaker *et al.* specify the step-wise approach to conducting whitewater baoting studies, as follows:

• Level 1 – "desk-top" options: This is the initial information collection and integration phase. It usually focuses on "desk-top" methods using existing information, or limited interviews with people familiar with flows and recreation on the reach.

• Level 2 – limited reconnaissance options: This increases the degree of resolution through limited reconnaissance-based studies, more intensive analysis of existing information, or more extensive interviews.

• Level 3 – intensive studies: This substantially increases the degree of resolution through more intensive studies, which may include multiple flow reconnaissance, flow comparison surveys, or controlled flow studies.

In this case, the Licensee proposes to limit its study to a Level I desktop analysis. According to the protocols specified in the paper, the decision to proceed from a Level 1 to a more intensive analysis rests on answers to the following questions:

1. Are there flow-dependent recreation opportunities on the river segments?

2. Are flow-dependent opportunities affected by project operations?

3. Are flow-dependent recreation opportunities "important" relative to other resources or foregone power generation?
4. Does Level 1 information precisely define flow ranges and potential project effects for each flow-dependent opportunity?

In the case of the Rio bypassed reach, the answers to these questions are already known. Recreation opportunities in the bypassed reach is a flow-dependent activity. The Licensee acknowledges that the gradient and character of the bypassed reach is similar to that of the lower reach below the project tailrace and that whitewater boating is currently occurring below the project. Project operations adversely impact on whitewater boating opportunities in the bypassed reach as the project diverts all but minimum flows into a penstock for power generation, depriving the bypassed reach of flows that could otherwise be used for whitewater boating. Stakeholders, including FERC and AW/AMC/KCCNY have identified that studying the opportunity for whitewater boating is important, and there is no agreement among stakeholders and agencies to forego studying whitewater boating relative to other resource needs. Finally, there is a lack of precise information on flow ranges in the bypassed reach that would enable the Licensee, FERC and stakeholders to determine the minimum acceptable and optimal boating flows.

While the Licensee asserts that a decision on whether to proceed to an on-water study of the bypassed reach is dependent on the results of its Level 1 analysis, the answers to the questions specified by the protocols are already known. As such, the Licensee should be required to conduct and on-water controlled flow analysis as part of its whitewater boating study. In addition, the Licensee should assess whether modifications to existing facilities, possibly including modifications to spillways, flashboards, outlet valves, or the installation of a gate, would facilitate whitewater boating releases from the Rio Dam. The Licensee should also utilize its operations model to determine the availability of flows and the impact on project generation resulting from scheduled whitewater boating releases into the bypassed reach.

- Lower Mongaup Below the Rio Powerhouse

The 3-mile section of the Mongaup River between the Rio powerhouse and the confluence with the Delaware River provides a high-quality whitewater boating opportunity when sufficient flows are provided. Under the current Article 401 in the current license, the Licensee is required to provide a one-turbine release of 435 cfs below the Rio powerhouse tailrace on one day every other weekend between April 15 and October 31 for four hours during alternating Saturdays and Sundays. In 2004, FERC ordered the Licensee to study the feasibility of providing two-turbine releases from the powerhouse, and in 2007, required the Licensee to provide a two-turbine release once a month below the project.

We recognize that both one-turbine and two-turbine releases provide different whitewater boating opportunities. The Licensee should be required to analyze boater sign-in logs, survey boaters at scheduled releases, and develop an online boater survey in order to assess boater preferences for release levels under the current license requirements. The Licensee should use this data to determine the appropriateness and the adequacy of the current releases in order to determine whether there is demand for an increase in the number of releases or changes to flows.

In addition, the Licensee should conduct an on-water controlled flow whitewater boating evaluation of the lower Mongaup reach as part of the on-water assessment of the bypassed reach) to determine minimum acceptable and optimal boating flows. An on-water evaluation of both the upper and lower reach is important because it will allow for an evaluation of a range of flows over the entire reach, not just one or two turbine releases from the tailrace as provided currently. An evaluation of the entire 4.5-mile reach from the dam to the Delaware did not occur in the prior boating study and should be conducted because doing so would be qualitatively different than an evaluation of only two test flows on just the lower portion.

In refusing to conduct a robust whitewater boating study as requested by stakeholders, the Licensee identifies the following deviations from stakeholders' study requests, stating the following:

- *AW/AMC/KCCNY requested a controlled flow whitewater boating assessment, including multiple on water-flow assessments. The Licensee is not proposing to conduct an on-water controlled flow evaluation at this time as the need for such is dependent on the results of this assessment.*
- *AW/AMC/KCCNY requested that the Licensee evaluate opportunities to modify or enhance the current whitewater flow release schedule, boater access facilities, and/or boating information The Licensee is not proposing to evaluate such opportunities at this time because the need for modifications or enhancements, if any, is dependent on the results of this assessment.*

The Licensee is plainly disinterested in conducting serious study of whitewater boating opportunities impacted by project operations. In refusing to conduct an on-water assessment, and in addition, refusing to study the adequacy of current release schedules, access, and flow information, the Licensee seeks to avoid collecting data that would evaluate the adequacy of current recreational opportunities and the need for additional measures under a new license. The purpose of the studies is to provide FERC with sufficient information with which to complete its NEPA analysis, and the Licensee's unwillingness to complete a robust study will prevent FERC from performing an adequate environmental review of the project.

- FERC Study Requests

FERC similarly requested that the Licensee evaluate the opportunity for whitewater boating in the bypassed reach below the Rio Dam, including the adequacy of existing whitewater releases below the tailrace, as follows:

- Evaluate the adequacy and appropriateness of the current whitewater boating opportunities at the Project, including flow releases and access facilities.
- Assess whitewater boating opportunities in the bypassed reach between the Rio Project minimum flow powerhouse tailrace and the main powerhouse tailrace.
- Identify potential measures to enhance whitewater boating opportunities.
- Include consultation with stakeholder groups to develop a whitewater boating-specific addendum to the recreation use/user survey instrument that would rate satisfaction with the current whitewater boating flow release schedule, access facilities, and boating information.
- The study report should include an assessment of opportunities to modify or enhance the current whitewater flow release schedule, boater access facilities, and/or boating information

The Licensee fails to acknowledge that its Proposed Study Plan fails to achieve any of the goals identified in FERC's study request. With regard to existing whitewater boating opportunities at the project, the Licensee does not propose to study the adequacy or appropriateness of current whitewater boating opportunities as its survey instrument fails to collect information on minimum acceptable or optimal boating flows, the adequacy of current release schedules, or the adequacy of current flow information. The Licensee does include an entire section in the survey seeking information on boating in the bypassed reach; however, little or no useful information will be collected given that the Licensee is unwilling to conduct an on-water boating assessment of the bypassed reach and natural spill greater than 100 cfs is virtually nonexistent. Although FERC requests that the Licensee assess whitewater boating opportunities in the bypassed reach, the Licensee will be unable to do so without an on-water boating assessment at various flow levels.

Furthermore, the Licensee does not propose to identify measures to enhance whitewater boating opportunities as part of this study, such as releasing flows into the bypassed reach or increasing the number of scheduled whitewater releases from the powerhouse. Notably, the Licensee's proposed study report does not include an assessment of opportunities to modify or enhance the current whitewater flow release schedule, boater access facilities, and/or boating information as requested by FERC. Instead, the Licensee inadequately proposes to describe whitewater boating flows in the bypassed reach without assessing minimum acceptable or optimal boating flows, nor does it propose to collect information on demand for additional boating opportunities. While it purports to include recommendations on the need for an on-water controlled flow evaluation, it provides no basis for doing so.

The Licensee proposes to rely on the results of the 1990 boating study, but that study did not include the bypassed reach at various flow levels. In addition, whitewater boats and boating have fundamentally changed in the 18 years since the last study with a greater emphasis on "playboating" rather than river running, and the results of the 1990 study are no longer a valid measure of recreational boating on the lower reach. In order to evaluate the entire reach from the Rio Dam to the Delaware confluence in terms of flow levels, features, and length in comparison to other regional boating resources, a new boating study should be conducted as part of this relicensing. The Licensee has not included a copy of the 1990 whitewater boating study

referenced in its Proposed Study Plan. It should file a copy of this study report with its response to these comments.

Operations Model Study

The Licensee should revise its proposed Operations Model study to include alternative modes of operation that would enhance whitewater boating opportunities in the bypassed reach and below the Rio powerhouse. While the current license requires 15 scheduled releases during the April 15 – October 31 boating season, alternative modes of operation under a new license may require significantly more releases from either the powerhouse or at the Rio Dam. The Licensee should study the impact of additional releases on reservoir elevation levels and generation under alternative modes of operation in its Operations Model Study in order to determine the feasibility of enhancing whitewater boating opportunities in and below the project boundary.

Base and Bypass Flow Study

The Licensee contends that a Base and Bypass Flow Study is unnecessary because the prior Licensee completed an IFIM study nearly 30 years ago. Requiring a new IFIM study in this relicensing would be appropriate and allow FERC to evaluate the impact of significant flood events including Hurricane Irene in 2011. In addition, a new IFIM would allow for an assessment of habitat in the bypass reaches and downstream of project tail races to determine whether existing base flows are adequate, as well as the need for variable flows in the Rio Dam bypassed reach.

Fisheries Survey Study

The Licensee proposes to conduct its Fisheries Survey Study solely in the late summer/early fall period, which is the driest period of the year. Contrary to the Licensee's assertion, this period will not "provide the information necessary to understand the fish populations associated with the Projects." By ignoring the spring season as well as much of the summer and fall, the Licensee will be unable to collect sufficient information on various fish species at various life stages under various flow conditions. In addition, the Licensee should extend the study area down to the confluence of the Mongaup with the Delaware River, as generational flows may impact on aquatic habitat in the lower Mongaup section.

Water Quality Study

The Licensee is proposing to monitor water quality only in the upper sections of the bypassed reaches. Given that the project limits flows in the bypassed reaches to minimum flows of 100 cfs, changes in dissolved oxygen and temperature may occur between the upper extent of these reaches and project tailraces that impact on aquatic habitat, particularly in the bypassed reach below the Rio Dam. Similarly, studying water quality immediately below the Rio Dam tailrace may not be sufficient, as peaking operations may impact water quality down to the confluence of the Mongaup with the Delaware River.

Conclusion

American Whitewater, Appalachian Mountain Club, and Kayak and Canoe Club of New York respectively request that the Licensee revise its Proposed Study Plan to address these comments and concerns in order to provide FERC with sufficient information to conduct its NEPA analysis of project impacts.

Respectfully submitted this 22nd day of January, 2018.

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UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

Eagle Creek Renewable Energy Application for New License	Swinging Bridge Hydroelectric Project (No. 10482) Mongaup Falls Hydroelectric Project (No. 10481) Rio Hydroelectric Project (No. 9690)

CERTIFICATE OF SERVICE

Pursuant to Rule 2010 of the Commission's Rules of Practice and Procedure, I hereby certify that I have this day caused the foregoing **American Whitewater, Appalachian Mountain Club, and Kayak and Canoe Club of New York's Comments in Response to the Proposed Study Plan for the Swinging Bridge, Mongaup Falls and Rio Hydroelectric Projects (P-10482, P-10481, and P-9690)** to be served upon each person designated on the official service list compiled by the Secretary in this proceeding.

Dated this 22nd day of January 2018.

Megan Hooker
American Whitewater

UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

Eagle Creek Hydro, LLC, Eagle Creek Water Resources, LLC, and Eagle Creek Land Resources, LLC	Project No. 9690-112 Project No. 10481-067 Project No. 10482-117

COMMENTS OF HOMEOWNERS ON TORONTO ON REVISED STUDY PLAN

Homeowners on Toronto, Inc. ("HOOT") appreciates the opportunity to comment on the Revised Study Plan ("RSP")[1] submitted in the above-captioned projects by Eagle Creek Hydro, LLC; Eagle Creek Water Resources, LLC; and Eagle Creek Land Resources, LLC (collectively, "Eagle Creek"). The RSP proposes fourteen studies, and adopts some of the changes urged by HOOT in its December 11, 2017 comments on the PSP.[2] Additional changes to the RSP are necessary, however, if this licensing process is to provide a record adequate to support issuance of a new license. As discussed below, Eagle Creek should be required to conduct the Socioeconomic Impacts Study requested by HOOT. In addition, Eagle Creek should be directed to refine its proposed Recreation User and Shoreline Management Assessment survey instruments; and it should be prepared to expand sampling for its proposed Recreation User Survey—including by administering the survey in a second study year—if necessary to obtain enough complete responses to enable meaningful analysis. Eagle Creek should also be directed to clarify its plans for repairs to the Toronto Reservoir gate tower and the extent to which those

[1] Eagle Creek, Revised Study Plan (Jan. 10, 2018), eLibrary No. 20180110-5112.

[2] eLibrary no. 20171211-5154 ("PSP Comments").

repairs will require changes to reservoir levels that may affect its ability to execute its Study Plan with respect to Toronto Reservoir.

I. EAGLE CREEK SHOULD PERFORM THE SOCIOECONOMIC IMPACTS STUDY REQUESTED BY HOOT.

In the RSP, Eagle Creek makes four new[3] arguments: (1) it asserts that "FERC does not typically quantify non-power benefits" (RSP at 12); (2) it claims that the Socioeconomic Impacts Study is not necessary to inform the development of license requirements, and that the proposed Recreation and Shoreline Management Assessment Studies will yield sufficient information to determine the impact of reservoir levels and fluctuations on future recreation growth and opportunity (*id.* at 13-14); (3) it suggests that FERC only requires applicants to conduct socioeconomic impact studies if the applicant has proposed to do so (*id.* at 14); and (4) it asserts that the cost of the Socioeconomic Impacts Study is not warranted (*id.* at 14-15).[4] These arguments all fail.

A. The Commission Routinely Requires Applicants to Quantify Non-Power Uses Under the ILP.

Contrary to Eagle Creek's assertion (RSP at 13), quantitative studies of non-power uses are routinely required by ILP Study Plans. Under the Federal Power Act's ("FPA") comprehensive development standard, the Commission must give equal consideration to a wide range of developmental and non-developmental uses. License

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[3] HOOT incorporates by reference its refutation of the PSP's incorrect assertion, supported only by inapposite case law, that there is an insufficient nexus between project operations and socioeconomic impacts. PSP Comments at 2-7.

[4] Eagle Creek also states that HOOT failed to satisfy the study request criteria, because it did not include an estimate of the effort and cost of the study. RSP at 14. Rejection of HOOT's Socioeconomic Impacts Study request based on this criterion, however, is inconsistent with the instructions provided by Commission Staff at the Scoping meeting. Transcript of 7p Scoping Meeting in Monticello, New York at 48 (Aug. 3, 2017), eLibrary No. 20170803-4004. In addition, elsewhere in the RSP, Eagle Creek concedes "that no study requests were discarded based solely on this criteri[on]." RSP at 19.

applicants have therefore been required, among other things, to provide detailed counts of wildlife, map wetlands and habitat, measure water quality and consumptive water use, count recreationists, estimate future demand for recreation, and measure project impacts on shoreline uses and land and housing values. Indeed, Eagle Creek's own RSP includes multiple studies of other non-power uses that specifically seek to quantify those uses and their impacts.

Neither of the cases cited by Eagle Creek supports its rejection of the Socioeconomic Impacts Study requested by HOOT. In *State of California v. FERC*, 966 F.2d 1541 (9th Cir. 1992), the court held that the Commission was not *required* to conduct a quantitative analysis of recreational values to meet its equal consideration obligation, where the Commission had found it was impossible to quantify the recreational benefits associated with the project. *Id.* at 1549-50 & n.2. The court, however, did not rule—and the Commission did not argue—that quantitative analyses of non-power uses should not be conducted where it is possible to do so. And in this case, the Socioeconomic Impacts Study requested by HOOT is feasible and would use widely accepted quantitative social science methodologies.

Eagle Creek's reliance on *Conservation Law Foundation v. FERC*, 216 F.3d 41 (D.C. Cir. 2000), is likewise misplaced. In that case, the D.C. Circuit held that the Commission can satisfy its obligation to give "equal consideration" to non-power values without performing a Cost-Benefit Analysis in which non-power benefits are reduced to dollars and balanced against the dollar value of developmental benefits such as power generation. *Id.* at 46-47. And while Eagle Creek is correct that "FERC does not typically quantify non-power benefits" (RSP at 12) for the purpose of weighing and balancing

competing public interest considerations in its best-adapted determination, it goes too far when it asserts this means license applicants are not required to rigorously study and quantify non-power uses and impacts where it is possible and useful to do so.

The Socioeconomic Impacts Study requested by HOOT is not a Cost-Benefit Analysis. It seeks to rigorously measure the local and regional socioeconomic impacts of the Mongaup River Projects—a factor that the Commission is required to consider by the FPA and National Environmental Policy Act ("NEPA"). But the study would not dictate how those impacts are balanced against other developmental and non-developmental values, or reduce the Commission's "statutory obligation to weigh and balance all public interest considerations" to "a mere mathematical exercise." 216 F.3d at 46. And while *Conservation Law Foundation* approvingly quotes the Commission's statement that "[f]or 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," *id*. at 46-47 (citing *Great Northern Paper, Inc.*, 85 FERC ¶ 61,316, at 62,244-45 (1998)) (emphasis added and internal quotations removed), a study of socioeconomic impacts does not reduce impacts to monetary terms; the impacts themselves are of the dollars-and-cents variety.

Eagle Creek should be required to study the projects' socioeconomic impacts with the same care and thoroughness that the Commission expects Eagle Creek to use in its studies of environmental, recreational, and other non-power uses. And the Commission should reject Eagle Creek's argument that quantitative studies of such uses are not typically required.

B. The Socioeconomic Impacts Study Requested by HOOT Is Needed to Inform the Development of License Conditions in this Case.

Contrary to Eagle Creek's assertions, the Socioeconomic Impacts Study requested by HOOT is appropriate and important to developing license conditions for the Swinging Bridge Project. The Mongaup River Projects are located within a short drive from the nation's largest urban area; they are heavily used for recreation and have the potential to accommodate significant additional recreational use; the shorelines of some project reservoirs are highly developed; and some shorelines are being actively developed now. Non-power uses and development at and near project reservoirs will be major factors in any best-adapted determination made by the Commission in these proceedings. As discussed in HOOT's Scoping Comments,[5] and its PSP Comments,[6] a better understanding of the impact of Toronto Reservoir elevation levels and fluctuations on the availability of recreation, the local economy, and the property tax base will inform the Commission's decisionmaking with respect to both the Toronto Reservoir operating regime and recreation-related license requirements.

Understanding the projects' socioeconomic impacts is especially important with respect to the Swinging Bridge Project, because supporting local economic development goals will likely require a significant change to the project's existing operating regime. The current elevation operating range for Toronto Reservoir—a swing of 50 feet, with no seasonal or drought-condition restrictions (RSP at 24)—is fundamentally incompatible with consistent recreational use and long-term local development goals. It may well be

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[5] Homeowners on Toronto, Inc., Comments on Pre-Application Document, Scoping Comments, and Study Requests at 20 (July 31, 2017), eLibrary No. 20170731-5187 ("Scoping Comments").

[6] PSP Comments at 2.

that in other licensing proceedings, given the range of potential license conditions under active consideration, available information was sufficient to shape best-adapted license conditions without also performing a socioeconomic impacts study like the one requested by HOOT. Indeed, HOOT believes that in this case many other factors—including recreation, shoreline management, and environmental protection—justify substantially narrowing the existing elevation operating range for Toronto Reservoir. However, in the absence of any indication that Eagle Creek recognizes the need to dramatically change its Toronto Reservoir operating protocols in the new license term, HOOT believes it is crucial to develop an adequate record on socioeconomic impacts to help inform the Commission's licensing decision.

Moreover, Eagle Creek is incorrect when it asserts that its proposed Recreation and Shoreline Management Assessment Studies "will yield sufficient information to determine the impact of reservoir levels and fluctuations on future recreation growth and opportunity at the Projects and inform the need for future license conditions related to recreation." RSP at 13. Eagle Creek's proposed Recreation Study will only evaluate "[f]uture recreation demand at the Projects *under current Project operations*." *Id.* at 109 (emphasis added). If its estimates of future recreation demand are restricted in this manner, Eagle Creek's Recreation Study cannot inform the need for license conditions that modify the existing operating regime. In addition, while HOOT appreciates Eagle Creek's proposed modifications to the Shoreline Management Assessment Survey and Recreation User Survey, which attempt to capture respondent recollections of the historical relationship between recreational uses and reservoir elevation, the information likely to be collected as a result of those modest changes is not a substitute for an analysis

of the socioeconomic impacts of reservoir elevations (although the survey responses can and should be used as a source of data for the Socioeconomic Impacts Study).

C. Eagle Creek's Failure to Propose a Socioeconomic Study Does Not Relieve It of the Obligation to Perform One if Needed to Inform the Commission's Licensing Decision.

Eagle Creek also suggests that socioeconomic studies like the one requested by HOOT are voluntary and that the Commission does not require them from licensees that do not offer to conduct one. *Id.* at 14. The Commission should reject this suggestion. An evaluation of socioeconomic impacts is required by NEPA and the FPA, and there is no Commission rule or policy that ILP Study Plans will include a socioeconomic study only if the applicant volunteers to perform it. Moreover, while Eagle Creek is correct that in the specific proceedings cited by HOOT in its PSP Comments, the license applicants proposed to conduct a socioeconomic impact analysis, Commission Staff makes independent decisions whether to require applicant-proposed studies.[7] Eagle Creek's failure to volunteer under the facts of this relicensing (i.e., involving licensee-controlled dams and reservoirs, heavy recreational use, substantial and ongoing shoreline development, etc.) does not relieve it of the obligation to perform the socioeconomic study needed to inform the Commission's licensing decision. Indeed, the fact that other license applicants have voluntarily proposed robust socioeconomic impact studies only highlights the magnitude of this omission from Eagle Creek's Study Plan.

[7] *See, e.g.*, Don Pedro Project Study Plan Determination, Appendix A at 1-2, Project No. 2299-075 (Dec. 22, 2011), eLibrary No. 20111222-3041 (requiring only some of the studies proposed by the applicants).

D. Eagle Creek's Assertion that a Socioeconomic Study Would Be Prohibitively Expensive is Unsupported and Implausible.

Eagle Creek asserts that a Socioeconomic Impacts Study as proposed by HOOT would cost from $250,000 to $500,000. RSP at 14-15. Those figures seem implausible, and we question whether the data collection and economic modeling HOOT has requested could possibly impose costs of that magnitude. Moreover, while HOOT, as an association of homeowners, lacks the expertise to develop a different estimate, it is clear that the basis for Eagle Creek's cost estimate is fundamentally flawed. Eagle Creek relies on the socioeconomic study cost estimates developed by Alabama Power Company and Commission Staff for the Martin Dam relicensing proceeding, and an assertion that the cost range for the Martin Dam study is "similar to the range of costs estimated in the proceedings in which Eagle Creek's consultants have been involved." *Id.* at 15.

Eagle Creek, however, has failed to demonstrate that those cost estimates are for similar studies at comparable projects. Lake Martin reservoir, which is impounded by Martin Dam, has 880 miles of shoreline.[8] Toronto Reservoir, albeit only one of the reservoirs of the Mongaup River Projects, has approximately 11 miles of shoreline.[9] The entire Swinging Bridge Project, including Toronto Reservoir, Swinging Bridge Reservoir, and Cliff Lake, has less than 35 miles of shoreline.[10] While some of the same types of analyses might need to be conducted for the Socioeconomic Impacts Study requested by

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[8] Final Environmental Impact Statement for Hydropower License at 13, Project No. 349-173 (Apr. 2, 2015), eLibrary No. 20150402-4001.

[9] New York State Department of Environmental Conservation, *Toronto Reservoir*, http://www.dec.ny.gov/outdoor/61540.html (last visited Jan. 23, 2018).

[10] *Id.*; New York State Department of Environmental Conservation, *Swinging Bridge Reservoir*, http://www.dec.ny.gov/outdoor/61533.html (last visited Jan. 23, 2018); New York State Department of Environmental Conservation, *Cliff Lake*, http://www.dec.ny.gov/outdoor/61572.html (last visited Jan. 23, 2018).

HOOT in this proceeding, the data collection effort required for the Martin Dam Project would appear to be orders of magnitude greater than that required for the Swinging Bridge Project. Eagle Creek's assertion, based on the estimated cost of studying the Martin Dam Project, that a Socioeconomic Impacts Study of the Swinging Bridge Project is unwarranted should be ignored.

II. THE PROPOSED RESERVOIR WATER LEVEL FLUCTUATION/ OPERATION MODEL STUDY IS LIKELY SUFFICIENT, SUBJECT TO CERTAIN CONDITIONS.

HOOT argued in its PSP Comments that Eagle Creek must, at minimum, either study all alternatives proposed by stakeholders, or give stakeholders access to the model, so that the stakeholders can study alternatives themselves. In the RSP, Eagle Creek does not commit to study stakeholder proposals or make the model available. However, it states that it is not proposing *any* alternatives as part of this study, and indicates that potential scenarios will not be identified or evaluated until later, as part of the relicensing alternatives analysis.[11]

HOOT appreciates Eagle Creek's clarification. And with that understanding, HOOT now believes that the Study Plan is sufficient, so long as the operations model produced by this Study is calibrated to allow testing of the full range of alternatives, including, without limitation, run-of-river operation for the Toronto Reservoir, as well as the operating protocol that HOOT proposed in its Scoping Comments: i.e., maintenance

[11] RSP at 27.

of Toronto Reservoir water level at 1,218 msl, plus or minus 2 feet, during the recreation season; and at 1,215 msl, plus or minus 5 feet, year-round.[12]

III. THE PROPOSED RECREATION STUDY SHOULD BE REVISED AND SUPPLEMENTED.

The revised Recreation Study is a significant improvement over the draft included in the PSP. A few more changes are needed, however. First, Eagle Creek proposes to estimate future demand only "under current Project operations."[13] This limited study may inform the development of some recreation-related license conditions, but it will not yield information about the impacts on recreation of alternative operating regimes that the Commission could impose. To help address this omission, HOOT's PSP Comments (at 11-12) requested that the Study Plan require a broader survey of potential (future) recreational visitors through a mailed or online questionnaire. Eagle Creek's RSP does not include such a survey. RSP at 111-12.

We urge the Commission to consider supplementing Eagle Creek's Study Plan to address this issue more systematically, even if it chooses not to require a broader mailed or online survey in its Study Plan Determination. For example, as explained in HOOT's Scoping Comments (at 10-12), access to Toronto Reservoir from certain recreational facilities is severely curtailed when the licensee has drawn down water levels. Eagle Creek's RSP already proposes "to quantify and map the relationship between reservoir surface area and reservoir levels for the range of operation at each Project reservoir" (RSP at 109); that task could be expanded to include a structured evaluation of the

[12] HOOT of course reserves the right to dispute any refusal by Eagle Creek to study an alternative put forward by HOOT as part of the relicensing alternatives analysis.

[13] RSP at 109.

accessibility of existing and proposed recreation sites at different reservoir elevations. In addition to compiling information on general aesthetics and taking photos of recreation facilities during the study season (*id.* at 106), Eagle Creek could be directed to produce conceptual renderings of photographed locations at different reservoir elevations. Conceptual renderings could also be used to illustrate the effects of reservoir elevation on any scenic views identified by the Recreation User Survey and Shoreline Management Assessment Survey (*id.* at 126 (question 27), 152 (question 25)). There are, no doubt, other relatively modest changes to the RSP that could help fill the void left by Eagle Creek's failure to propose any study to estimate the effects of changing reservoir operations on the demand for recreation.

Second, the revised Recreation User Survey includes a new question: "To the best of your knowledge, please provide the range of reservoir/river levels that you have experienced while recreating at this reservoir within the past 5 years?" *Id.* at 124 (question 14). HOOT supports asking survey respondents about their past experience at project reservoirs, as such questions may elicit useful information on recreational use during periods when reservoir elevations were different from the time the survey is administered. The specific question proposed by Eagle Creek, however, might be more effective if it used a comparative metric, rather than asking for a numerical response. Recreation users are unlikely to be aware of numerical reservoir elevations, particularly if a gage is not easily visible from the recreation site. Eagle Creek therefore might be able to obtain more useful information if it asks respondents to characterize water levels without a specific msl number (e.g., as "high," "very low," "low," etc.), or if it asks survey respondents to compare their experiences to the reservoir level on the day the

survey is administered (responses could then be roughly converted to msl based on the actual reservoir level on the survey day).

Finally, Eagle Creek's proposed user contact survey must be designed to collect an adequate number of completed responses. Toward that end, the survey should be conducted during a period of sustained high water levels when potential recreationists are aware that Toronto Reservoir is accessible for recreation. And if it is necessary to collect a reasonable number of complete responses and to enable meaningful analysis, Eagle Creek should be prepared to increase the times when the user contact survey is administered, including by repeating the survey in subsequent study years.

IV. THE PROPOSED SHORELINE MANAGEMENT ASSESSMENT STUDY SHOULD BE REVISED AND SUPPLEMENTED.

HOOT appreciates the improvements to the proposed Shoreline Management Assessment Survey that Eagle Creek has made in response to HOOT's PSP Comments. For example, asking respondents about their satisfaction with reservoir levels over the past five years, rather than simply at the time the survey is filled out, will elicit more useful information by taking advantage of shoreline residents' experiences with a wide range of reservoir levels in all seasons. Additional changes are needed, however.

A. Shoreline Management Guidelines

Consistent with HOOT's request in its PSP Comments,[14] the Shoreline Management Assessment questionnaire in Eagle Creek's RSP replaces the PSP's generic question on the respondent's satisfaction with Eagle Creek's "shoreline management

[14] PSP Comments at 15.

practices"[15] with a somewhat more specific question about satisfaction with "Eagle Creek's *implementation of its shoreline management guidelines* and with Eagle Creek's *land management practices*."[16] The RSP questionnaire, however, still fails to identify the specific areas covered by Eagle Creek's shoreline management guidelines and land management practices that the survey respondent is being asked to evaluate. As many respondents may be unaware of the extent of Eagle Creek's shoreline management criteria and responsibilities, the question(s) should clearly describe the particular substantive criterion or criteria that the survey respondent is being asked to evaluate (e.g., Eagle Creek's implementation of a specific vegetation management requirement, erosion prevention measure, or guideline for structures in the water and on land, etc.).

B. Proposed Questions

In addition, while the revised survey instrument adopts a modified version of HOOT's proposed question "[w]hether and how low or unpredictable reservoir levels have affected the decisions of the residential property owner's household members regarding whether, when, and how to recreate at Toronto Reservoir,"[17] it omits HOOT's other four proposed questions, with no explanation other than a generic statement that "[f]or the most part, the Licensee has revised the survey to incorporate revisions suggested by HOOT and Swinging Bridge Property Owners Association, with some exceptions where the requested revision either was not applicable or would not produce information that would inform the development of a Shoreline Management Plan or other

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[15] Eagle Creek, Proposed Study Plan at 116 (question 19) (Sept. 12, 2017), eLibrary No. 20170912-5144 ("PSP").

[16] RSP at 152 (question 22) (emphasis added).

[17] PSP Comments at 15; RSP at 152 (question 24).

potential future license conditions."[18] As neither of those elimination criteria applies to any of the questions proposed by HOOT, all four questions should be added to the survey instrument. Two in particular would elicit vital information.

1. Project Aesthetics

Both the RSP's proposed Recreation User Survey and its proposed Shoreline Management Assessment Survey appropriately include questions asking the respondent to identify scenic views. RSP at 126 (question 27), 152 (question 25). Although the impact of reservoir levels on project aesthetics may not be directly related to the development of a Shoreline Management Plan for the reservoirs, it is an issue included in the scoping for this project. As noted in HOOT's PSP Comments, shoreline residents have extensive experience with the reservoirs at many water levels. It would be foolish not to use the opportunity of this survey to gather information about their observations. Accordingly, HOOT's proposed question "[w]hether and to what extent the residential property owner has noticed an impact of reservoir levels on project aesthetics"[19] should be included in the approved survey instrument.

2. Dock Length and Location

Any Shoreline Management Plan will presumably include requirements related to private docks. Those requirements must be reasonable in light of whatever operating bandwidth the Commission ultimately approves for the project reservoirs. The survey

[18] RSP at 147.

[19] PSP Comments at 15.

should therefore include the following question originally proposed in HOOT's PSP Comments:[20]

> If the residential property owner uses a boat, whether there have been occasions upon which the property owner's dock length has been inadequate due to low reservoir levels, and whether the homeowner has had to lengthen a dock, or use heavy equipment to move a dock, during the recreational season, due to low reservoir levels.

Quantitative data on this issue can also be obtained as part of Eagle Creek's proposal "to quantify and map the relationship between reservoir surface area and reservoir levels for the range of operation at each Project reservoir."[21] To the extent not already included within the scope of the proposed mapping, Eagle Creek's Shoreline Management Assessment Study should be expanded (in addition to the evaluation of public recreation site accessibility proposed in Part III, above) to determine the distance from the high-water mark to a depth adequate for docking a motor boat of typical draft—i.e., the minimum functional dock length—at various points around the reservoirs and at various reservoir elevation levels.

V. EAGLE CREEK SHOULD CLARIFY THE IMPACT OF TORONTO GATE TOWER REPAIRS ON THE STUDY SCHEDULE.

The RSP addresses the impact on the study schedule of construction of a proposed minimum flow unit at the Swinging Bridge dam.[22] It neglects, however, to mention the impact of repairs to the Toronto gate tower. Eagle Creek should be directed to clarify its plans for repairs to the Toronto Reservoir gate tower, and to explain the extent to which

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[20] *Id.*

[21] RSP at 109.

[22] RSP at 196-97.

those repairs will require reservoir level changes that may affect its ability to execute its Study Plan with respect to Toronto Reservoir.

CONCLUSION

Eagle Creek's RSP should be approved only with modifications as discussed above. Eagle Creek must perform studies yielding adequate data to allow the Commission and stakeholders to assess the impacts of continued operation of the projects, as well as alternative operating scenarios.

Respectfully submitted,

/s/ *Rebecca J. Baldwin*

William S. Huang
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January 25, 2018

CERTIFICATE OF SERVICE

I hereby certify that I have this day caused the foregoing document to be served upon each person designated on the official service list compiled by the Secretary in this proceeding.

Dated on this 25th day of January, 2018.

/s/ *Rebecca J. Baldwin*
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United States Department of the Interior

FISH AND WILDLIFE SERVICE
3817 Luker Road
Cortland, NY 13045

January 25, 2018

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

RE: Rio Hydroelectric Project (FERC No. P-9690-112)
Mongaup Falls Hydroelectric Project (FERC No. P-10481-067)
Swinging Bridge Hydroelectric Project (FERC No. P-10482-117)
Comments on Revised Study Plan

Dear Ms. Bose:

The U.S. Fish and Wildlife Service (Service) has reviewed the January 10, 2018, *Revised Study Plan* (RSP) submitted by Eagle Creek Hydro Power, LLC, Eagle Creek Water Resources, LLC, and Eagle Creek Land Resources, LLC, collectively referred to as Eagle Creek Hydro (Applicant) for the Rio (FERC No. 9690-112), Mongaup Falls (FERC No. 10481-067), and Swinging Bridge Hydroelectric Projects (FERC No. 10482-117). The three projects, collectively known as the Mongaup River Hydroelectric Projects (Project or Projects), are located on the Mongaup River in Sullivan and Orange Counties, New York. The Service originally provided study requests in our July 26, 2017, letter to the Applicant. We additionally provided updated study requests and comments on the Applicant's September 12, 2017, *Proposed Study Plan* (PSP) in our December 11, 2017, letter filed with the Federal Energy Regulatory Commission (FERC).

General Comments

The study plan development for the Projects has involved considerable consolidation, review, synthesis, and coordination with the many stakeholders involved in the relicensing process. We commend the Applicant for their efforts in this regard. In general, the RSP has adequately presented the available information and has largely incorporated the studies requested by the stakeholders. However, there are still notable areas where the Applicant has not fully incorporated the requested studies or stakeholder comments. We will focus our comments on the RSP by referring to previously requested studies and suggesting any modification that may still be necessary.

Specific Comments by Study

1. Reservoir Water Level Fluctuation/Operation Model Study

We generally support this study as presented in the RSP. The Service requests modification to the proposed study to fully incorporate Section I.E. of our December 11, 2017, comments on the PSP regarding upstream flows in the Delaware, temperature data (as available), and presentation of the results. Additionally, we request that the development of the Reservoir Water Level Fluctuation/Operation Model be done in consultation with the Service, the New York State Department of Environmental Conservation (NYSDEC), and the National Park Service (NPS), so that we may provide input regarding model calibration decisions and assumptions. The Applicant states in Section 5.10 that there is no nexus to Project operations for flows in the Delaware River upstream of its confluence with the Mongaup River, and that the flows from the Mongaup River are relatively small when compared to the Delaware River. The evaluation of Project impacts on flow releases in the Delaware River upstream of its confluence with the Mongaup River is a cumulative impact related to Project operations and water management in the Delaware River Basin. The NPS and the Service thoroughly addressed this issue on pages 9 and 6, respectively, of our July 26, 2017, and July 28, 2017, and Study Request letters.

2. Aquatic Habitat Assessment Study

The Applicant has largely incorporated our request regarding the scope and additional information to collect for this study. We appreciate these modifications by the Applicant. The NYSDEC provided a specific study request for wetlands in Section IV.F. in their December 11, 2017, comments on the PSP, and we recommend this study be required as a separate study. If wetlands are assessed through this study, we note that the methodology as proposed does not conform to standard methods and practice and does not meet the goals and objectives of the original study requests. The Service recommends a modification to this study to describe and map the approximate boundary of all wetlands in the vicinity of the Projects, including the impoundments, Black Lake Creek, Black Brook, and Mongaup River to the confluence with the Delaware River. Limiting efforts to large wetland complexes hydraulically connected to the Projects' impoundments may not include all wetlands potentially affected by the Projects. This scope of wetland mapping is standard in most license applications.

3. Fisheries Survey Study

The Applicant has accepted our recommendations to survey in the Mongaup River to the confluence with the Delaware and to target spring migratory fish species in this reach. We appreciate these modifications made by the Applicant.

The fisheries survey study is a significant area of concern as it has been presented in the RSP. The Applicant has incorporated fisheries data provided by the NYSDEC on November 15, 2017, into the RSP. The Applicant now believes that the existing information is sufficient to reduce fisheries surveys to 1 day per impoundment and stream reach across the Projects, and to exclude sampling in Black Brook. The Service disagrees the existing data is sufficient. While there have been 62 surveys over the course of 30 years in the Mongaup River system conducted by the NYSDEC, the data provided continue to illustrate the need for a comprehensive fisheries survey

at the Projects. All of the surveys conducted since 2010 occurred at Swinging Bridge and Rio Reservoir except one survey conducted in 2016 in Black Brook. The NYSDEC has not provided, nor has the Applicant presented, any current information for Toronto, Cliff Lake, and Mongaup Falls Reservoirs, any segment of the Mongaup River, or Black Lake Creek. Additionally, the recent efforts in Swinging Bridge, Rio, and Black Brook, as well as the majority of all the surveys after 2000, have been to target specific fisheries information (e.g., percids, salmonids, centrarchids) and do not represent comprehensive fisheries surveys. For example, only one survey since 1988 utilized seining, and this method captured unique species not found in any other survey results. Additionally, no recent targeted surveys for alewife (*Alosa pseudoharengus*) have been conducted.

We note that the Applicant is not proposing to survey during the spring spawning season as they have proposed to maintain the existing reservoir elevations as a Protection Mitigation and Enhancement (PME) measure in lieu of performing studies. The Applicant did not convene a meeting with the stakeholders, as requested in our Study Requests letter, to discuss this potential PME measure as a substitute for studies. The Service is requesting targeted fisheries information to evaluate the effectiveness of PME measures from the original licensing and does not support forgoing these studies.

The Service recommends that the Applicant's proposed study be modified to incorporate the fishery survey methodologies, including those for alewife, provided by the NYSDEC to the Applicant in their December 11, 2017, comments on the PSP. The Applicant should utilize multiple gear types across several locations per impoundment and study reach over multiple seasons and be able to compare new data with existing data at the Projects and from other waterbodies in New York State. Additionally, we recommend that the study be modified to include extensive American eel (*Anguilla rostrata*) sampling as provided in FERC's December 6, 2017, Study Request and the Service's Study Request and PSP comments letters. Additionally, we recommend the Applicant's study be modified to include separate, targeted efforts for American shad (*A. sapidissima*). Given the differences in migration timing for American eel and American shad, it is unlikely they would occur together during the same sampling event, thereby necessitating a species-specific sampling approach.[1] We support the Applicant's proposal to consult with the resource agencies regarding sampling periods for these species. Lastly, we recommend that the Applicant's study be modified to include a late fall/winter or early spring survey in the impoundments to inform a season-specific assessment of entrainment at the Projects as requested in our comments on the PSP.

4. Fish Entrainment/Impingement Study

The Fish Entrainment/Impingement Study is also an area of particular concern. The Applicant has proposed in the RSP to evaluate entrainment and impingement only for American eel at the Rio Project and not to evaluate fish passage at this time. The latter is a change from the PSP as the Applicant had proposed to evaluate upstream American eel passage at the Projects. The Applicant states in Section 8.10 that there is no evidence that American eel will migrate

[1] The FERC required species-specific migratory fish studies in their January 23, 2017, Study Plan Determination for the Upper Mechanicville Project (FERC #2934), located on the Hudson River, in New York.

upstream of Mongaup Falls. American eel have historically been located above Mongaup Falls[2] and additional evidence can be found in Appendix E-140 of the RSP where American eel were noted as occurring in Mongaup Reservoir. The Projects entrain fish and block the movement of American eel and other fish species. It is appropriate that fish protection and fish passage options be evaluated during the study period. We have extensively reviewed the Projects' effects, the existing information, and provided a detailed Fish Entrainment and Mortality, Fish Protection, and Upstream and Downstream Passage study request in our previous correspondence. We recommend that our study request be required so that the Service may adequately evaluate fish entrainment and mortality and fish passage needs at the Projects and so that we can properly administer our Section 18 prescriptive authority.

5. Water Quality Study

The Applicant has generally accepted the study requests and recommendations of the stakeholders for this study. We recommend several modifications to the Applicant's proposed study as described in Section II.I. of our December 11, 2017, PSP comments regarding the locations of monitoring equipment and spring data collection. As currently proposed, when the Rio and Mongaup Falls Projects are generating and changing the conditions at the intake/minimum flow release, there will be a gap in the data for the bypassed reaches. Additionally, the Applicant is proposing to only use the existing monitoring station roughly in the middle of the reach below Swinging Bridge. Since the reservoirs normally become stratified, we recommend that the study be modified such that profile data is collected from the surface to the bottom of each reservoir, as this is consistent with the existing data collected in the 1992-1993 entrainment study. The Service also recommends that generation data at all powerhouses and release information from the Toronto Reservoir be included with the flow data to allow the evaluation of the effect of flows on water quality. Additionally, we request that the study be modified such that the Applicant will provide all the raw water quality, flow, and generation data to the agencies, in addition to the report, so the stakeholders can independently review the data. We note that the maps of proposed locations for the monitoring locations do not appear to correspond with the description of the locations, and the Service recommends the maps be updated based on FERC's study determination.

6. Macroinvertebrate and Mussel Survey

The Service generally supports this study as proposed by the Applicant. We recommend two modifications to the study. The Service recommends that all identified mussel beds in the Mongaup River below the Rio dam be surveyed. This is a priority area for mussel surveys as the Mongaup River is hydraulically connected to the Delaware River and could potentially contain the federally listed dwarf wedgemussel (*Alasmidonta heterodon*). Additionally, we recommend that the northern survey location for macroinvertebrates in Cliff Lake be located at or above the tunnel diversion to Swinging Bridge, as this area was noted in the RSP as being distinct when compared to areas at the southern end of the reservoir.

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[2] Page 16 in Dittman, D.E., L.S. Machut, and J.H. Johnson. 2009. American eel history, status, and management options: Delaware River Drainage. Final Report for New York State Contract #C005548, Comprehensive study of the American eel. Tunison Laboratory of Aquatic Science, USGS, Great Lakes Science Center, Cortland, New York. 102 pp.

7. Recreation Facility Inventory, Recreation Use and Needs Assessment, and Reservoir Surface Area Assessment Study Plan

In general, the Service has no major concerns with this proposed study; however, multiple stakeholders have requested that the winter period be included in the survey effort to address ice fishing and bald eagle (*Haliaeetus leucocephalus*) watching. We support the inclusion of winter recreation data in the study plan.

8. Whitewater Boating Assessment Study

The Service has no additional comments on this study.

9. Shoreline Management Assessment Study

The Service has no additional comments on this study.

10. Cultural Resources Study

The Service has no additional comments on this study.

11. Black Brook Dam Decommissioning Study

The Applicant has incorporated the FERC's study request into this study, and we have supported this request. We recommend two modifications to the Applicant's proposed study. We recommend that the Applicant conduct a fisheries and macroinvertebrate study in Black Brook as originally requested by the Service and the NYSDEC to aid in our evaluation of the effects of decommissioning. Additionally, we request that the Applicant provide an opportunity for the agencies to join in the field for the assessment of this dam and impoundment to provide additional on-site experience with the location.

12. Special-Status Species Survey Study

The Applicant has incorporated the FERC's study request and our comments into this study, and we generally support the Applicant's proposed study. We recommend that the study be modified to include recording any additional raptor species noted as roosting, foraging, or nesting at the Projects, in conjunction with this effort and the bald eagle study.

13. Bald Eagle Management Study

We provided a detailed Bald Eagle Population and Winter Foraging study request in our comments on the PSP. The Applicant has not proposed a study that will meet the goals and objectives of this study based on the available information and the methodology proposed.

14. Bypass/Base Flow Transect Evaluation Study

The Applicant has included this study in the RSP to evaluate the adequacy of the existing Instream Flow Integrated Methodology (IFIM) data to address the goals and objectives of the flow studies requested by multiple stakeholders based on our comments on the PSP. The Applicant has not proposed to provide any observations of the existing or proposed flows. The Service's preferred option would be that a Delphi or updated IFIM study be required as requested by the Service and the NYSDEC. We have previously presented our concerns with relying solely on the existing data from nearly 30 years ago. If the Applicant's proposed study is accepted, we recommend modifications to this study as described in the Service's comments on the PSP regarding the number of transects to be evaluated per reach and acceptable error. Additionally, the Applicant has not confirmed that they are in possession of the raw data for the study and can adequately re-measure the exact locations of the transects from the IFIM study. Lacking this information, it is unclear how the Applicant will quantitatively assess, within sample blocks, any changes in channel morphology that have occurred. We also recommend that the Applicant provide opportunities for stakeholders to observe the existing and proposed flows. The IFIM is a tool to be used as part of a larger effort to determine appropriate flows for a stream reach. Flow observations are necessary for the evaluation of this model and our discussions that may be based on it.

<u>Schedule for Conducting Studies and Proposed Swinging Bridge Minimum Flow Powerhouse Amendment</u>

The Applicant has provided a table in Section 19 describing the field activities for the proposed studies and the construction schedule for the proposed minimum flow powerhouse at Swinging Bridge. We note that the table does not include the spring fisheries survey proposed in the RSP.

In our January 8, 2018, letter to the Applicant, we recommended that the majority of the relicensing studies be conducted outside of the construction period for the proposed powerhouse to limit the impacts of the construction on the study results. As currently proposed, construction of the powerhouse, if approved by the FERC under a separate amendment process, would occur during the study period. The Applicant did not discuss the potential effects of construction on generation, minimum flow provisions, or other Project operations that could affect the accuracy of the studies, other than limiting construction activities to periods outside of the winter roosting and foraging season for bald eagles. We note that construction activities are currently planned during the study period. The Service is concerned that the Applicant did not provide an evaluation of the potential impacts on the study results due to these activities. If the Applicant's amendment is approved by the FERC and construction will be undertaken in 2018, we recommend that all studies potentially affected by this construction be conducted in 2019 after the completion of construction. Alternatively, the construction could be delayed until after the completion of studies.

*****

We appreciate the opportunity to comment on the RSP and look forward to the issuance of the study plan determination from the FERC by February 9, 2018. If you have any questions or desire additional information, please contact John Wiley at 607-753-9334.

Sincerely,

David A. Stilwell

David A. Stilwell
Field Supervisor

cc: TU, Plattsburgh, NY (W. Wellman)
NYSDEC, New Paltz, NY (J. Murray)
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January 25, 2018

Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
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Re: Rio Hydroelectric Project (FERC No. 9690)
Mongaup Falls Hydroelectric Project (FERC No. 10481)
Swinging Bridge Hydroelectric Project (FERC No. 10482)

Comments on Revised Study Plan

Dear Ms. Bose:

The New York State Department of Environmental Conservation (NYSDEC) has reviewed the January 10, 2018, *Revised Study Plan* (RSP) submitted by Eagle Creek Hydro Power, LLC, Eagle Creek Water Resources, LLC, and Eagle Creek Land Resources, LLC, collectively referred to as Eagle Creek Hydro (Applicant) for the Rio (FERC No. 9690-112), Mongaup Falls (FERC No. 10481-067), and Swinging Bridge Hydroelectric Projects (FERC No. 10482-117). The three projects, collectively known as the Mongaup River Hydroelectric Projects (Project or Projects), are located on the Mongaup River in Sullivan and Orange Counties, New York. The NYSDEC originally provided study requests in our July 28, 2017, letter to the Applicant. NYSDEC additionally provided updated study requests and comments on the Applicant's September 12, 2017, *Proposed Study Plan* (PSP) in our December 11, 2017 letter filed with the Federal Energy Regulatory Commission (FERC).

I. General Comments

The study plan development for the Mongaup Projects has involved considerable consolidation, review, synthesis, and coordination with the many stakeholders involved in the relicensing process. NYSDEC commend the Applicant for their efforts in this regard. The RSP has generally well presented the available information and has largely incorporated the studies requested by the stakeholders. However, there are still notable areas of concern regarding the studies proposed in the RSP where the Applicant has not fully incorporated the requested studies or stakeholder comments. The Applicant has well-noted where these deviations occur. It is the position of NYSDEC that the majority of the information for the FERC's study plan determination is already on the record. The

Re: Rio Hydroelectric Project (FERC No. 9690)
Mongaup Falls Hydroelectric Project (FERC No. 10481)
Swinging Bridge Hydroelectric Project (FERC No. 10482)

Comments on Proposed Study Plan

NYSDEC stands by all our comments on the PSP submitted on December 11, 2017, and rather than reiterate each of them in this letter, we will focus our comments on the RSP through reference to this information by referring to previously requested studies and suggesting any modification that may still be necessary.

II. Specific Comments by Study

1. Reservoir Water Level Fluctuation/Operation Study

NYSDEC largely support this study as presented in the RSP. NYSDEC request modification to the study to fully incorporate our comments in Section IV.I of our comments on the PSP regarding upstream flows in the Delaware, temperature data (as available), and presentation of the results. Additionally, NYSDEC request modification to the study that the development of the model be done in consultation with NYSDEC, the U.S. Fish and Wildlife Service (USFWS) and the National Park Service (NPS) so that we may provide input regarding model calibration decisions and assumptions. The Applicant states in Section 5.10 of the RSP that there is no nexus to project operations for upstream flows in the Delaware and that the flows from the Mongaup River are relatively small when compared to the Delaware River. The evaluation of upstream impacts in the Delaware is an indirect and cumulative impact from Project operations and water management in the Delaware Basin. The NPS has addressed this issue on page 9 in their July 24, 2017, study request letter. The USFWS additionally addressed the significance of the flows in the Mongaup River on page 6 of their July 26, 2017, study request letter.

2. Aquatic Habitat Assessment Study

The Applicant has largely incorporated our request regarding the scope and additional information to collect for this study. NYSDEC appreciates these modifications by the Applicant. The NYSDEC provided a specific study request for wetlands in Section IV.F of our December 11, 2017, comments on the PSP, and recommend this study be required as a separate study. If wetlands are assessed through the Applicant's study, NYSDEC notes that the methodology as proposed may fail to identify wetlands areas that are not located in the vicinity of the NWI and NYSDEC-mapped wetlands to be verified. Therefore, the proposed methodology of the Applicant's study may not meet the goals and objectives of the original study requests. The NYSDEC would recommend a modification to this study such that the Applicant describes and maps` the approximate boundary of all wetlands in the vicinity of the Projects, not just large wetland complexes hydraulically connected to the Projects' impoundments. Locations where any physical modification to the land throughout the current and future license terms may require wetland delineations that will need to be field verified by NYSDEC.

3. Fisheries Survey Study

The Applicant has accepted our recommendations to survey in the Mongaup River to the confluence with the Delaware and to target spring migratory species in this reach. NYSDEC appreciates these modifications made by the Applicant. However, the fisheries survey study is a significant area of concern as it has been presented in the RSP. NYSDEC will address this issue in more detail as these changes are based on additional information since the PSP was issued.

The Applicant has incorporated fisheries data provided by the NYSDEC on November 15, 2017, into the RSP. The Applicant now feels that the existing information is sufficient to reduce fisheries surveys to one day per impoundment and stream reach across the Projects, and to exclude sampling in Black Brook. NYSDEC disagrees with this assessment of the existing data. While there have been 62 surveys over the course of 30 years in the Mongaup River system conducted by the NYSDEC, the data provided continue to illustrate the need for a comprehensive fisheries surveys at the Projects. The majority of the 62 surveys targeted specific species and did not evaluate the fish community as a whole. All of the surveys conducted since 2010 occurred at Swinging Bridge and Rio Reservoir with one survey conducted in 2016 in Black Brook. The NYSDEC has not provided nor has the Applicant presented any current information for Toronto, Cliff Lake, Mongaup Falls, any segment of the Mongaup River, or Black Lake Creek.

Additionally, the recent efforts in the Swinging Bridge and Rio Reservoirs have specifically targeted juvenile walleye and these surveys are not appropriate to evaluate the fish community as a whole. Only one survey was conducted on Black Brook, and this survey targeted trout with only 100 feet of stream length shocked at one sampling location. This survey did not evaluate the fish community and was merely a presence absence survey for trout.

Additionally, only one survey since 1988 utilized seining, and no surveys utilized fyke or trap nets. These methods, when used in conjunction with electrofishing and gill nets, are most effective at sampling the entire fish community. For FERCs use (and the Applicants), sampling protocols previously cited by NYSDEC are included as attachments to this letter.

Additionally, no recent targeted surveys for alewife (*Alosa pseudoharengus*) have been conducted.

Additionally, NYSDEC notes that the Applicant is only proposing to conduct boat electrofishing during the daytime. This method of fish collection is most effective during nighttime and should be incorporated into the sampling plan.

Additionally, the NYSDEC notes that the Applicant is not proposing to survey during the spring spawning season as they have proposed to maintain the existing reservoir elevations as a Protection Mitigation and Enhancement (PME) measure in lieu of performing studies. The NYSDEC is concerned with evaluating the outcomes of this PME measure from the last relicensing and does not support forgoing studies, in this case.

Therefore, the NYSDEC recommends that the Applicant's study be modified to incorporate the methodologies, including those for alewife (*Alosa pseudoharengus*), provided to the Applicant in our December 11, 2017, comments on the PSP. The Applicant would utilize multiple gear types across several locations per impoundment and study reach over multiple seasons and be able to compare with the previously collected data at the Projects and across New York State.

NYSDEC recommends that the study be modified to include FERC and the USFWS's requests for extensive eel sampling as provided in FERC's December 6, 2017, study request letter and the USFWS's study request and PSP comment letters.

NYSDEC recommends the Applicant's study be modified to include separate targeted efforts for American shad (*Alosa sapidissima*). Given the differences in migration timing for American eel and shad, it is unlikely they would occur together during the same sampling event, thereby necessitating a species-specific sampling approach. (The FERC required species-specific migratory fish studies in their January 23, 2017, Study Plan Determination for the Upper Mechanicville Project, located on the Hudson River, in New York.)

NYSDEC supports the Applicant's proposal to consult with the resource agencies regarding sampling periods for these species. Since run timing can be variable, sampling should occur over multiple days over a three-week period to ensure the spawning run is not missed.

Lastly, NYSDEC recommends that the Applicant's study be modified to include a late fall/winter or early spring survey in the impoundments to inform a season-specific assessment of entrainment at the Projects as requested in our December 11, 2017, comments on the PSP.

4. Fish Entrainment/Impingement Study

The Fish Entrainment/Impingement Study is also an area of particular concern. The Applicant has proposed in the RSP to evaluate entrainment and impingement only for American eel at the Rio Project and not to evaluate fish passage at this time. The latter is a change from the PSP as the Applicant had proposed to evaluate upstream American

eel passage at the Projects. The Applicant states in Section 8.10 of the RSP that there is no evidence that American eel will migrate upstream of Mongaup Falls. American eel has historically been located above Mongaup Falls[1] and additional evidence can be found in Appendix E-140 of the RSP where American eel were noted as occurring in Mongaup Reservoir. The Projects entrain fish and block the movement of American eel. It is appropriate that fish protection and fish passage be evaluated during the study period as prescriptions at the Projects are likely and will be filed with the license applications. USFWS has extensively reviewed the Projects' effects, the existing information, and provided a detailed Fish Entrainment and Mortality, Fish Protection, and Upstream and Downstream Passage study request in their previous correspondence (which NYSDEC concurs with). NYSDEC recommends that the USFWS study request be required so that the USFWS may adequately evaluate fish entrainment and mortality and fish passage at the Projects and properly administer their Section 18 prescriptive authority.

5. Water Quality Study

The Applicant has largely accepted the study request and recommendations of the stakeholders in this study. NYSDEC recommends several modifications to the Applicant's study as described in Section IV.E of our PSP comments regarding the locations of monitoring equipment and spring data collection. As currently proposed, when the Rio and Mongaup Falls Projects are generating, and changing the conditions at the intake/minimum flow release, there will be a gap in the data for the bypassed reaches. Additionally, the Applicant is proposing only to use the existing monitoring station roughly in the middle of the reach below Swinging Bridge, whereas NYSDEC recommends an additional monitoring station just above the confluence with Mongaup Falls Reservoir. NYSDEC recommends that the study be modified such that profile data is collected of the entire water column to the bottom of the reservoirs, as this is consistent with the existing data collected in the 1992-1993 entrainment study. The NYSDEC also recommends a modification that generation data at all powerhouses and release information from the Toronto Reservoir be included with the flow data to evaluate the effect of flows on water quality. Additionally, NYSDEC request that the study be modified such that the Applicant will provide all the raw water quality, flow, and generation data to the agencies, in addition to the report. NYSDEC notes that the maps of proposed locations for the monitoring locations do not appear to correspond with the description of the locations, and the NYSDEC recommends the maps be updated based on FERCs study determination.

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1 Page 16 in Dittman., D.E,. L.S. Machut and J.H. Johnson. 2009. American eel history, status, and management options: Delaware River Drainage. Final Report for New York State Contract #C005548, Comprehensive study of the American eel. Tunison Laboratory of Aquatic Science, USGS, Great Lakes Science Center, Cortland, New York. 102 pp.

6. Macroinvertebrate and Mussel Survey Study

NYSDEC largely support this study as proposed by the Applicant. The NYSDEC recommends two modifications to the study. The NYSDEC recommends that all identified mussel beds in the Mongaup River below the Rio dam be surveyed. This is a priority area for mussel surveys as the Mongaup River is hydraulically connected to the Delaware River and could potentially contain state listed mussel species. Additionally, NYSDEC recommends that the northern survey location for macroinvertebrates in Cliff Lake be located at or above the tunnel diversion to Swinging Bridge, as this area was noted in the RSP as being distinct when compared to areas at the southern end of the reservoir.

7. Recreation Facility Inventory, Recreation Use and Needs Assessment, and Reservoir Surface Area Assessment Study Plan

NYSDEC requested that the winter period be included in the survey effort for user participation in ice fishing and bald eagle observation. NYSDEC supports the Applicant's proposal to expand the scope of the proposed Recreation User Survey (Figure 11-5 of the RSP) to include questions regarding recreation activities in which the respondents participate in during the winter months. However, the Recreation User Survey is proposed to be administered during the spot count visits conducted between April and October of the 2018 study season. The time of year in which the Recreation User Survey is currently proposed to be administered may bias the survey results towards warmer weather recreation activities, which are best suited for user participation during the time of year in which the Recreation User Survey is to be conducted, and may not adequately capture the current use and needs of winter recreation participants. Therefore, NYSDEC continues to recommend the inclusion of spot counts during the winter months as the preferred method of recording winter recreation data in the study plan.

8. Whitewater Boating Assessment Study, Shoreline Management Assessment Study, and Cultural Resources Study

The NYSDEC has no additional comments on these studies.

9. Black Brook Dam Decommissioning Study

The Applicant has largely incorporated the FERCs study request into this study, and NYSDEC have supported this request. NYSDEC recommends two modifications to the Applicant's proposed study. NYSDEC recommends that the Applicant conduct a fisheries and macroinvertebrate study in Black Brook as originally requested by the NYSDEC and the USFWS to aid in our evaluation of the effects of decommissioning. Additionally, NYSDEC request that the Applicant provide an opportunity for the agencies to join in the

field for the assessment of this dam and impoundment to provide additional on-site experience with the location.

10. Special-Status Species Survey Study

The Applicant has largely incorporated the FERCs study request, and NYSDEC largely supports the Applicant's study. NYSDEC recommends that the study be modified to include recording any additional raptor species noted as roosting, foraging, or nesting at the Projects, in conjunction with this effort and the bald eagle (*NYS Threatened*) study.

11. Bald Eagle Study

The Applicant maintains that the existing data available from NYSDEC, volunteer eagle observers from the Delaware Highlands Conservancy (DHC), and other sources will provide sufficient information to assess potential impacts to bald eagles. The Applicant has proposed to present the existing information regarding nesting and foraging activity, conduct interviews with biologists familiar with the Mongaup River eagle population, and provide other observers, including their maintenance staff, the opportunity to record their observations of bald eagles at the Projects.

The existing bald eagle data available from the NYSDEC consists primarily of general coordinates of reported nest locations based on their last date of observation. These data are a starting point and do not represent current or extensive surveys for bald eagles at the Projects. Much of the available data is outdated, limited in scope, or tangential to the primary questions regarding bald eagle resource use in this area. Since public access to much of the Monqaup system is restricted during the winter months, the existing observation data is primarily limited to two eagle viewing blinds located at the north end of Mongaup Falls reservoir (County Route 43) and the north end of Rio Reservoir (Plank Road). No recent information has been collected in a systematic manner regarding the foraging behavior of overwintering eagles, overnight roost selection, or the availability and utilization of the entrained alewife forage base in the vicinity of the hydroelectric facilities themselves.

NYSDEC provided a detailed Bald Eagle Population and Winter Foraging study request in our December 11, 2017, comments on the PSP. The Applicant has not proposed a study that will meet the goals and objectives of this study based on the available information and the methodology proposed.

12. Bypass/Base Flow Transect Evaluation Study

The Applicant has included this study in the RSP to evaluate the adequacy of the existing Instream Flow Integrated Methodology (IFIM) data to address the goals and objectives of the flow studies requested by multiple stakeholders based on our comments on the PSP. The Applicant has not proposed to provide any observations of the existing or proposed flows. The NYSDEC's preferred option would be that a Delphi or updated IFIM study be required as requested by the Service and the NYSDEC. NYSDEC has previously presented our concerns with relying solely on the existing data from nearly 30 years ago. If the Applicant's proposed study is accepted, NYSDEC recommends modifications to this study as described in the USFWS's comments on the PSP regarding the number of transects to be evaluated per reach and acceptable error. Additionally, the Applicant has not confirmed that they are in possession of the raw data for the study and can adequately re-measure the exact locations of the transects from the IFIM study. Lacking this information, it is unclear how the Applicant will quantitatively assess, within sample blocks, any changes in channel morphology that have occurred. NYSDEC also recommend that the Applicant provide opportunities to observe the existing and proposed flows. The IFIM is a methodology in which usable area calculations are a modeling component of a larger effort to determine appropriate flows for a stream reach. Flow observations are necessary for the evaluation of this model and our discussions that may be based on it.

III. Schedule for Conducting Studies and Proposed Swinging Bridge Minimum Flow Powerhouse Amendment

The Applicant has provided a table in Section 19 of the RSP describing the field activities for the proposed studies and the construction schedule for the proposed minimum flow powerhouse at Swinging Bridge. In our December 11, 2017, letter to the Applicant we recommended that the relicensing studies be conducted outside of the construction period for the proposed powerhouse to limit the impacts of the construction on the study results. As currently proposed, construction of the powerhouse, if approved by the FERC under a separate amendment process, and the NYSDEC under our Section 401 Water Quality Certification jurisdiction, would occur during the study period. The Applicant did not discuss the potential effects on generation, minimum flow provision, or other environmental effects other than limiting construction activities outside of the winter roosting and foraging period for bald eagles. NYSDEC notes that construction activities are currently planned during this period. NYSDEC is concerned that the Applicant did not provide an evaluation of the potential impacts on the study results due to these activities.

Re: Rio Hydroelectric Project (FERC No. 9690)
Mongaup Falls Hydroelectric Project (FERC No. 10481)
Swinging Bridge Hydroelectric Project (FERC No. 10482)

Comments on Proposed Study Plan

As stated previously, the construction of the new minimum flow unit during the 2018 study season will likely require Eagle Creek to conduct a second season of studies in order to access and compare conditions at the Swinging Bridge Hydroelectric Project pre and post construction.

Thank you for the opportunity to comment on the Revised Study Plan and look forward to the issuance of the study plan determination from the FERC by February 9, 2018.

Sincerely,

Joseph R. Murray
Environmental Analyst 1
joseph.murray@dec.ny.gov

Attachments:

1. Guidelines for Stocking Trout Streams in New York State (Engstrom-Heg 1990)
2. Lake and Pond Fish Community Survey Protocols (Holst and Loukmas 2013)
3. NYSDEC Centrarchid Sampling Manual 1989
4. NYSDEC Percid Sampling Manual 1994.

ecc: John Petronella, NYSDEC
Mike Flaherty, NYSDEC
Mike DiSarno, NYSDEC
Brian Drumm, NYSDEC
Nate Ermer, NYSDEC
Jon Binder, NYSDEC
John Wiley, USFWS
Kevin Mendik, NPS
Quinn Emmering, FERC

Via eFile

January 29, 2018

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

Subject: **Swinging Bridge Hydroelectric Project (FERC No. P-10482-117)**
Mongaup Falls Hydroelectric Project (FERC No. P-10481-067)
Rio Hydroelectric Project (FERC No. P-9690-112)
Schedule for Relicensing Studies and Proposed Construction of Unit No. 3 at the Swinging Bridge Project

Dear Secretary Bose:

Eagle Creek Hydro Power, LLC, Eagle Creek Water Resources, LLC, and Eagle Creek Land Resources, LLC (collectively "Eagle Creek") herein submits supplemental information related to the on-going relicensing of the Swinging Bridge, Mongaup Falls, and Rio Hydroelectric Projects (collectively "Mongaup River Projects" or "Projects") as well as the Non-Capacity License Amendment Application for the existing license for the Swinging Bridge Hydroelectric Project. The Projects are located on the Mongaup River in Sullivan and Orange Counties, New York, and are licensed by the Federal Energy Regulatory Commission (FERC or Commission).

Pursuant to the requirements of the Integrated Licensing Process (ILP) and the schedule provided in the FERC's Scoping Document 2, the Revised Study Plan for the Mongaup River Projects was filed with the Commission on January 10, 2018 indicating that Eagle Creek proposes to perform one-season of studies in 2018 to support the relicensing of the Mongaup River Projects. The FERC Study Plan Determination is due to be issued by February 9, 2018.

Concurrent with the ongoing relicensing of the Mongaup River Projects, Eagle Creek proposes to amend its existing FERC license for the Swinging Bridge Project by replacing the inoperable 5 megawatt (MW) turbine-generator unit (Unit No. 1) with a new minimum base flow turbine-generator unit (Unit No. 3) that will be located in a new powerhouse directly adjacent to the Project's Unit No. 2 powerhouse at the Swinging Bridge development. As

indicated in the Non-Capacity License Amendment Application for the Swinging Bridge Project filed with the Commission on January 26, 2018, construction for the proposed Unit No. 3 is planned to commence in the second quarter of 2018 and extend through the second quarter of 2019. This planned construction schedule is required in order to meet the requirements for the proposed Unit No. 3 to be operational by July 2019 pursuant to the contract with the New York State Energy Research and Development Authority (NYSERDA) and for Eagle Creek to obtain the financial incentives necessary for the economic viability of the proposed Unit No. 3.

Through consultation with the stakeholders in support of the on-going relicensing of the Mongaup River Projects, as well as the Non-Capacity License Amendment Application for the Swinging Bridge Project, stakeholders have expressed concern that the proposed construction of Unit No. 3 at the Swinging Bridge development will impact the data collected during the 2018 relicensing studies rendering the data unrepresentative of current or normal conditions at the Swinging Bridge Project.

As described in the aforementioned Revised Study Plan and the Non-Capacity License Amendment Application, Eagle Creek has planned for the construction of the proposed Unit No. 3 to be coordinated with the schedule for the relicensing studies in order to minimize or eliminate potential impacts to data collected during these studies. In particular, the following measures have been incorporated into the construction process and proposed studies.

- The majority of the construction for the Unit No. 3 powerhouse (i.e., approximately 30 feet by 30 feet in size) and appurtenances will occur in a very limited footprint, in pre-disturbed upland area consisting primarily of an existing dirt access road.
- For the limited construction that will occur within the shoreline (currently covered with large rip-rap) of the Mongaup River, Eagle Creek will install measures to isolate the construction area from the river (i.e., installation of a temporary cofferdam around the tailrace of the new Unit No. 3) prior to June 1, 2018. This schedule will avoid potential impacts to studies to be performed in the Mongaup River downstream of the Swinging Bridge Dam which will commence after June 1, 2018 including the Fisheries Survey Study, Water Quality Study, Macroinvertebrate and Mussel Survey Study, and the Bypass/Base Flow Transect Evaluation Study.
- The proposed Unit No. 3 will utilize the same intake and penstock for the existing Unit No. 2 powerhouse. The existing penstock bifurcation for the existing minimum flow discharge valve will be extended to connect to the proposed Unit No. 3 powerhouse; therefore, no construction activities will occur within the Swinging Bridge Reservoir or along the embankment from the dam crest to the proposed powerhouse.
- The construction of the proposed Unit No. 3 will utilize existing access roads and upland lay-down areas and will not require tree or vegetation clearing.
- Eagle Creek anticipates no interruption to the required minimum flow during construction of Unit No. 3.
- Eagle Creek anticipates no interruption to the ability to operate the Unit No. 2

powerhouse within the requirements of the existing license during construction of Unit No. 3.

- Pursuant to comments provided by the USFWS and NYSDEC, the construction schedule for Unit No. 3 has been planned to avoid heavy construction activities with the potential to generate noise at levels considered adverse to wintering eagles during the bald eagle wintering period from December 1 through March 31.

Based on the information provided in the Revised Study Plan for the Mongaup River Projects as well as the Non-Capacity License Amendment Application, Eagle Creek believes there is no substantive reason that the data collected during the relicensing studies in 2018 will be adversely affected or misrepresentative of current and normal conditions at the Swinging Bridge Project.

If there are any questions regarding the information provided herein, please do not hesitate to contact Michael Scarzello with Eagle Creek at (973) 998-8400 or Jim Gibson with HDR at (315) 414-2202.

Sincerely,
Eagle Creek (Licensees)

Michael Scarzello
Regulatory Director

cc: Quinn Emmering, FERC
Kelly Houff, FERC
John Wiley, USFWS
Joseph Murray, NYSDEC

E-file Submission

In Reply to: P-10482-117; Swinging Bridge
P-10481-067; Mongaup Falls
P-9690-112; Rio

January 31, 2018

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

Subject: Swinging Bridge Hydroelectric Project (FERC No. P-10482-117)
Mongaup Falls Hydroelectric Project (FERC No. P-10481-067)
Rio Hydroelectric Project (FERC No. P-9690-112)
Response to Comments Regarding the Revised Study Plan

Dear Secretary Bose:

Eagle Creek Hydro Power, LLC, Eagle Creek Water Resources, LLC, and Eagle Creek Land Resources, LLC (collectively "Eagle Creek") are the owners and operators of the Swinging Bridge, Mongaup Falls, and Rio Hydroelectric Projects (collectively “Mongaup River Hydroelectric Projects” or “Projects”). The Federal Energy Regulatory Commission (“FERC” or “Commission”) licenses for the Mongaup River Hydroelectric Projects expire on March 31, 2022, and Eagle Creek is pursuing new licenses for each of the Projects through the Commission’s Integrated Licensing Process (ILP).

Consistent with the ILP schedule, on January 10, 2018, Eagle Creek filed a Revised Study Plan (RSP) with the Commission. Subsequent to this filing, and consistent with the ILP, stakeholders filed comments with the Commission regarding the RSP. In response to these comments, Eagle Creek herein provides a response to the stakeholder comments regarding the RSP, and notes that the majority of the following is consistent with the discussions during the October 4, 2017 Proposed Study Plan (PSP) Meeting and the November 9, 2017 meeting with representatives of the U.S. Fish and Wildlife Service, New York State Department of Environmental Conservation, and FERC.

Eagle Creek specifically chose to use the Commission’s ILP in support of relicensing the Mongaup River Projects in order to avail itself of the opportunity to have FERC resolve disputes, if any, over requested studies based on a thorough examination of the Commission’s ILP Study Criteria as defined in 18 CFR §5.9(b). In particular, throughout the strategic planning and preparation activities, Eagle Creek recognized that the Projects’

previous "Class of '93" relicensing, as well as the subsequent studies and monitoring activities during the term of the current license, resulted in a comprehensive and river-specific dataset available to be used in support of this relicensing process.

Throughout the study scoping process, Eagle Creek has provided a significant level of existing information to FERC and the stakeholders through the various filings and consultation activities. However, many of the stakeholders' requested studies appear to disregard the information that has been provided. Instead, the requested studies associated with the Fish Survey Study, Water Quality Study, Fish Entrainment/Impingement Study, Macroinvertebrate and Mussel Survey Study, Whitewater Boating Assessment Study, Black Brook Dam Decommissioning Study, Bald Eagle Management Study, and Bypass/Base Flow Transect Evaluation Study are consistent with studies typically proposed for projects undergoing relicensing in scenarios where no available information exists. By contrast, Eagle Creek's RSP proposes studies in which the existing information will be used and will be supplemented with the collection of new information as proposed in the RSP.

For each requested study, Eagle Creek has carefully evaluated the study request, the study goals, nexus to the project, how the resulting information may be used by the Commission and stakeholders, and the existing available information in order to develop study methodologies that will provide the Commission and the stakeholders with the information necessary to issue the new licenses and Section 401 Water Quality Certification(s). As presented in the PSP, RSP, and during consultation activities, Eagle Creek's proposed methodologies leverage and supplement the 62 fishery surveys that have been performed within the Projects' boundaries over the past 30 years, the year-round and seasonal water quality profiles and monitoring that has been performed, the annual bald eagle surveys, the site-specific entrainment and impingement study that included an evaluation of alewife, the previous whitewater study, and the previous Instream Flow Study.

Eagle Creek notes that with the exception of the request for a Socioeconomic Study, it has proposed a set of studies that address every study requested by the stakeholders; furthermore, Eagle Creek's proposed studies have been developed in the context of the Commission's Study Criteria and with an emphasis on the availability of existing relevant information and nexus to the Projects. Regarding the requested Socioeconomic Study, Eagle Creek contends that the proposed Recreation Facility Inventory, Recreation Use and Needs Assessment, and Reservoir Surface Area Assessment Study as well as the Shoreline Management Study will provide the Commission and stakeholders with the information necessary to evaluate Project operations relative to impacts associated with recreation and shoreline use activities, and thus a separate socioeconomic study is not necessary.

Eagle Creek respectfully requests that the Commission carefully evaluate each proposed study and study request relative to its Study Criteria and the level of new information with a nexus to project operations that each study would provide. In particular, Eagle Creek requests that the Commission consider the available site-specific data and require in its Study Determination only those studies that will provide new information needed to inform

the Commission in conducting the required NEPA evaluation and establishing the articles of the new licenses. In addition, Eagle Creek requests that the Commission consider Study Criteria No. 7 (i.e., level of effort and cost) in its Study Plan Determination. In particular, through use of the existing information, Eagle Creek's proposed studies, as compared to the alternative requested studies, significantly reduce the level of effort and cost while sufficiently meeting the study goals.

If there are any questions regarding this letter, please do not hesitate to contact Michael Scarzello with Eagle Creek at (973) 998-8402 or Jim Gibson with HDR at (315) 414-2202.

Sincerely,
Eagle Creek (Licensees)

Michael Scarzello
Regulatory Director

FEDERAL ENERGY REGULATORY COMMISSION
WASHINGTON, D. C. 20426
February 9, 2018

OFFICE OF ENERGY PROJECTS

Project No. 9690-112–New York
Rio Hydroelectric Project
Eagle Creek Hydro, LLC

Project No. 10481-067–New York
Mongaup Falls Hydroelectric Project
Eagle Creek Hydro, LLC

Project No. 10482-117–New York
Swinging Bridge Hydroelectric Project
Eagle Creek Hydro, LLC

Mr. Robert Gates
Eagle Creek Renewable Energy, LLC
116 North State Street
PO Box 167
Neshkoro, WI 54960-0167

Reference: Study Plan Determination for the Rio, Mongaup Falls, and Swinging Bridge Hydroelectric Projects

Dear Mr. Gates:

Pursuant to 18 C.F.R. § 5.13(c) of the Commission's regulations, this letter contains the study plan determination for the Rio Hydroelectric Project No. 9690, Mongaup Falls Hydroelectric Project No. 10481, and Swinging Bridge Hydroelectric Project No. 10482 (collectively referred to as the Mongaup River Projects). This 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.

Background

On September 12, 2017, the co-licensees for the projects; Eagle Creek Hydro Power, LLC, Eagle Creek Water Resources, LLC, and Eagle Creek Land Resources, LLC (collectively referred to as Eagle Creek Hydro) filed a proposed study plan (PSP) for 11

studies covering aquatic, fisheries, terrestrial, recreational, and cultural resources in support of their intent to relicense the Mongaup River Projects.

Eagle Creek Hydro held an initial study plan meeting on October 4, 2017, and a second meeting on November 9, 2017, to discuss the PSP. On January 10, 2018, Eagle Creek Hydro filed a revised study plan (RSP) that includes revisions to the proposed studies, and a newly proposed Black Brook Dam Decommissioning Study.

Comments on the RSP were filed by the National Park Service (Park Service) on January 19, 2018. American Whitewater (AW), Appalachian Mountain Club (AMC), and Kayak and Canoe Club of New York (KCCNY) jointly filed comments on the RSP on January 22, 2018. The U.S. Fish and Wildlife Service (FWS), New York State Department of Environmental Conservation (NYSDEC), and Homeowners on Toronto, Inc. (HOOT) filed comments on the RSP on January 25, 2018.

Study Plan Determination

Eagle Creek Hydro's RSP is approved, with the staff-recommended modifications discussed in Appendix B. Of the 14 studies contained in Eagle Creek Hydro's RSP, all 14 are approved with staff-recommended modifications (Appendix A). In addition, Eagle Creek Hydro is required to conduct 2 new studies on: Delaware River flows; and alewife. The specific modifications to Eagle Creek Hydro's study plans and need for new studies are discussed 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 specifically modified by this determination must be completed as described in the RSP.

Commission staff reviewed all study plan criteria in section 5.9 of the Commission's regulations; however, only the specific study criteria that are particularly relevant to this determination are referenced in Appendix B.

Pursuant to section 5.15(c)(1) of the Commission's regulations, the initial study report for all studies in the approved study plan must be filed by February 9, 2019.

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, Eagle Creek Hydro may choose to conduct any study not specifically required herein that it feels would add pertinent information to the record.

If you have any questions, please contact Quinn Emmering at quinn.emmering@ferc.gov or (202) 502-6382.

Sincerely,

For:
Terry L. Turpin
Director
Office of Energy Projects

Enclosures: Appendix A – Summary of determinations on proposed and recommended studies
Appendix B – Staff's recommendations on proposed studies and recommended study modifications

APPENDIX A

SUMMARY OF DETERMINATIONS ON PROPOSED AND RECOMMENDED STUDIES

Study	Recommending Entity	Approved	Approved with Modifications	Not Required
1. Reservoir Water Level Fluctuation/Operation Model Study	Eagle Creek Hydro, FERC		X	
2. Aquatic Habitat Assessment Study Plan	Eagle Creek Hydro, FERC		X	
3. Fisheries Survey Study Plan	Eagle Creek Hydro, FERC		X	
4. Fish Entrainment/Impingement Study	Eagle Creek Hydro, FWS		X	
5. Water Quality Study	Eagle Creek Hydro, FERC		X	
6. Macroinvertebrate and Mussel Survey	Eagle Creek Hydro,		X	
7. Recreation Facility Inventory, Recreation Use and Needs Assessment, and Reservoir Surface Area Assessment Study	Eagle Creek Hydro, FERC, Park Service, HOOT		X	
8. Whitewater Boating Assessment Study	Eagle Creek Hydro, AW, AMC, KCCNY (boating groups); FERC		X	
9. Shoreline Management Assessment Study	FERC, HOOT		X	

Study	Recommending Entity	Approved	Approved with Modifications	Not Required
10. Cultural Resources Study	Eagle Creek Hydro, FERC		X	
11. Black Brook Dam Decommissioning Study	Eagle Creek Hydro, FWS, FERC		X	
12. Special-Status Species Survey Study	Eagle Creek Hydro, FWS, NYSDEC, FERC		X	
13. Bald Eagle Management Study	Eagle Creek Hydro, FWS, NYSDEC, FERC		X	
14. Bypass/Base Flow Transect Evaluation Study	Eagle Creek Hydro, FERC		X	
15. Delaware River Flow and Aquatic Habitat Study	FERC, Park Service		X	
16. Alewife Hydro-Acoustic Study	FERC, FWS, NYSDEC		X	

APPENDIX B
STAFF RECOMMENDATIONS ON PROPOSED STUDIES AND RECOMMENDED STUDY MODIFICATIONS

The following discusses staff's recommendations on studies proposed by Eagle Creek Hydro and participants' requests for study modifications and additional studies.

SECTION 1: GENERAL ISSUES

General

Background

FWS notes that the table in Section 19, Schedule for Conducting Proposed Studies does not include the spring fisheries survey proposed in the RSP.

Discussion and Staff Recommendation

Staff recommend that Eagle Creek Hydro provide an updated schedule that includes the spring fisheries survey and any additional schedule modifications that result from this study plan determination.

Construction and Repairs during Relicensing Studies

Background

On January 26, 2018, the Eagle Creek Hydro filed with the Commission an application, separate from the current relicensing process, for a non-capacity license amendment for the Swinging Bridge Project. In the application, Eagle Creek Hydro proposes a new 30-foot by 30-foot powerhouse and minimum-flow turbine generator (Unit 3) with a rated capacity of 1.1 megawatts (MW) to replace the existing inoperable turbine generator (Unit 1) with a rated capacity of 5 MW. The new powerhouse would be located immediately adjacent to, and north of, the existing powerhouse for Unit 2 with a rated capacity of 6.75 MW. The proposal would lower the authorized installed capacity in the current license from 11.75 MW to 7.85 MW. Eagle Creek states that Unit 3 would need to be operational by July 2019 in order to maintain its existing contract with the New York State Energy Research and Development Authority.

Eagle Creek Hydro has stated it plans to perform repairs to the Toronto Reservoir intake gate tower in the near future, though they have not specified exactly when repairs would be initiated.

Comments

FWS and NYSDEC notes that construction of the new powerhouse would occur during relicensing studies and are concerned that construction related to the amendment, if approved, could potentially impact relicensing study results. FWS further states that Eagle Creek Hydro did not address potential effects of such construction on generation, minimum flows, or other project operations that could affect the accuracy of the studies, other than limiting construction activities to periods outside of the winter roosting and foraging season for bald eagles.

FWS recommends that all studies potentially affected by construction of the proposed powerhouse be conducted in 2019 after the completion of construction or that construction be delayed until after the completion of studies. NYSDEC states that it would likely require Eagle Creek Hydro to conduct a second season of studies in order to compare conditions at the Swinging Bridge Hydroelectric Project pre- and post-construction.

HOOT stated that the licensee should be directed to clarify its plans for repairs to the Toronto Reservoir intake gate tower and the extent to which those repairs would require changes to reservoir levels that may affect its ability to execute its study plan with respect to Toronto Reservoir.

Eagle Creek Hydro's Response and Proposal

On January 29, 2018, the Eagle Creek Hydro filed a letter in response to the agencies' concerns regarding potential effects of the proposed construction on the results of relicensing studies. In their letter, they provide clarification on the proposed construction and additional information on measures that would be implemented to prevent impacts to relicensing studies. Eagle Creek Hydro's additional information and proposed measures include:

- The majority of the construction for the Unit 3 powerhouse and appurtenances would occur in a very limited footprint, in pre-disturbed upland area consisting primarily of an existing dirt access road.

- For the limited construction that would occur within the shoreline of the Mongaup River, which is currently covered with large rip-rap, they would implement measures to isolate the construction area from the river (i.e., installation of a temporary cofferdam around the tailrace of the new Unit 3) prior to June 1, 2018. This schedule would avoid potential impacts to studies to be performed in the

Mongaup River downstream of the Swinging Bridge Dam, which would commence after June 1, 2018, including the Fisheries Survey Study, Water Quality Study, Macroinvertebrate and Mussel Survey Study, and the Bypass/Base Flow Transect Evaluation Study.

- The proposed Unit 3 would utilize the same intake and penstock for the existing Unit 2 powerhouse. The existing penstock bifurcation for the existing minimum flow discharge valve would be extended to connect to the proposed Unit 3 powerhouse; therefore, no construction activities would occur within the Swinging Bridge Reservoir or along the embankment from the dam crest to the proposed powerhouse.

- The construction of the proposed Unit 3 would utilize existing access roads and upland lay-down areas and would not require tree or vegetation clearing.

- No interruption to the required minimum flow during construction of Unit 3.

- No interruption to the ability to operate the Unit 2 powerhouse within the requirements of the existing license during construction of Unit 3.

- The construction schedule for Unit 3 has been planned to avoid heavy construction activities with the potential to generate noise at levels considered adverse to wintering eagles during the bald eagle wintering period from December 1 through March 31.

Discussion and Staff Recommendation

We agree with FWS and NYSDEC that construction of the proposed minimum flow powerhouse has the potential to affect relicensing studies; however, we expect that Eagle Creek Hydro's proposed measures noted above should prevent impacts to the relicensing studies. We also agree with HOOT that repairs to the Toronto Reservoir intake gate tower could involve changes to reservoir levels that may affect its ability to execute its study plan with respect to Toronto Reservoir. Therefore, we recommend that Eagle Creek Hydro identify in its Initial Study Report, any reservoir changes associated with the repairs to the Toronto Reservoir intake gate tower and discuss if and to what extent those changes and any other construction effects associated with the repairs affected its first year studies.

SECTION 2: MODIFICATIONS TO PROPOSED STUDIES

Study 1 – Reservoir Water Level Fluctuation/Operation Model Study

Eagle Creek Hydro's Proposal

Eagle Creek Hydro proposes to develop, calibrate, and validate a Computer Hydro Electric Operations and Planning Software (CHEOPS™) operations model that integrates each of the three Mongaup River Projects. The operations model would support the future evaluation of proposed and potential recommendations for project operations at an hourly time-step and under various reservoir inflow and outflow conditions. Upon completion, the operations model would be capable of predicting reservoir elevations, surface areas, available storage, and generation that would result from various operational scenarios. In particular, in order to address the stakeholders' requests, the model would be utilized to support future evaluations of impoundment elevations and downstream flows based on proposed operating, flow, and recreation alternatives for the three projects.

Comments on the Study

HOOT comments that the RSP is sufficient, so long as the operations model produced by this Study is calibrated to allow testing of the full range of alternatives. NYSDEC and FWS generally support the RSP; however, they both request that the RSP be modified to fully incorporate their previous comments on the PSP regarding upstream flows in the Delaware, temperature data (as available), and presentation of the results. Additionally, NYSDEC requests that the RSP be modified to require the model to be done in consultation with the NYSDEC, FWS, and Park Service. NYSDEC and FWS also request that Eagle Creek Hydro consult with them during the development of the Reservoir Water Level Fluctuation/Operation Model regarding model decisions and assumptions. Park Service state that their previous comments on the PSP were not addressed regarding the need for the operation model to determine the calibration influence of the Mongaup River flows and temperatures on the upstream and downstream Delaware River conditions at seven USGS gages on the Delaware River system upstream of the Mongaup River and five USGS gages on the Delaware River downstream of the Mongaup River confluence.

Discussion and Staff Recommendation

The proposed operation model, as presented in the RSP, is described very generally with little information on the processes, methodology, and the data to be used

[section 5.9(b)(4) and (6)]. As mentioned above, Park Service, NYSDEC, FWS, and HOOT requested to be involved during the development and calibration of the model. Allowing the agencies to review and recommend input regarding the data sets to be used in the analyses and the model's output data would ensure that the model, once developed, is capable of analyzing both the proposed project and any agency alternative. Therefore, Eagle Creek Hydro should conduct one or more workshops with relicensing participants during the development of the Operations Model. Eagle Creek Hydro should also conduct a workshop when the model is ready for use to show how the model works and its ability to analyze operation alternatives [section 5.9(b)(6)]. If Eagle Creek Hydro does not adopt a recommendation from Park Service, NYSDEC, FWS, and Hoot, Eagle Hydro should explain its rationale for not doing so in the Initial Study Report. The rationale should be based on the study criteria stipulated in section 5.9(b) of the Commission's regulations.

We note that the Park Service requests a study of the projects' effects on the Delaware River, including both flow and temperature data, which both NYSDEC and FWS support. In Section 3 – *Studies Requested but Not Adopted by Eagle Creek Hydro*—we conclude that there is no nexus between project operations and flows on the Delaware upstream of the Mongaup River confluence and recommend not adopting Park Service's proposed study of this upstream reach [section 5.9(b)(5)].

Study 2 – Aquatic Habitat Assessment Study

Eagle Creek Hydro's Proposal

Eagle Creek Hydro proposes to conduct desktop and field surveys to document and map within the reservoirs' fluctuation zones: aquatic habitats and aquatic invasive species, erosion areas, as well as recording encountered biological features such as fish spawning beds, mussel beds, or shell materials.

As part of this study, Eagle Creek Hydro also proposes to verify National Wetland Inventory (NWI) and NYSDEC-mapped wetlands within the projects' boundaries. In addition, the type and GPS location of any wetlands found to be unmapped or where major discrepancies from the existing maps are found would also be documented. Further, any major discrepancies would be noted on aerial maps and provided in the study report. In order to obtain the data, and as conditions allow, Eagle Creek will use side-scan sonar (SSS) from a boat to identify aquatic habitat types. In addition, Eagle Creek will use multi-beam sonar (MBS) from a boat to obtain bathymetric data.

Comments on the Study

The FWS and NYSDEC note that Eagle Creek Hydro's proposed methodology to assess wetlands do not conform to standard method and practice and does not meet the goals and objectives of their original study requests.

NYSDEC also notes that the proposed methodology may fail to identify wetland areas not located in the vicinity of the NWI- and NYSDEC-mapped wetlands to be verified.

As a result, the agencies ask that Eagle Creek Hydro develop a standalone wetland delineation study, separate from the *Aquatics Habitat Assessment Study* to help clarify the study's components, and modify the study to describe and map the approximate boundary of all wetlands in the vicinity of the projects. In addition, FWS specifically recommends the study scope also include the impoundments, Black Lake Creek, Black Brook, and the Mongaup River to the confluence with the Delaware River.

Discussion and Staff Recommendation

Wetland Delineation Study

We agree with FWS and NYSDEC that Eagle Creek Hydro should modify *Study 2 - Aquatic Habitat Assessment* by separating the wetland objective into a standalone study to provide needed clarity for staff and stakeholders. As currently organized, it's unclear as to why disparate study requests (e.g. wetlands, aquatic habitat, etc.) have been incorporated into the single Aquatic Habitat Assessment Study. Therefore, we recommend that Eagle Creek Hydro extract the wetland objective (discussed below) into a standalone study. Dividing the studies, as such, would provide needed clarity for staff and stakeholders to more effectively evaluate, reference, and locate each study's respective objectives and methods [section 5.9(b)(6)].

Eagle Creek Hydro argues that standard wetland delineation methods, as recommended by FWS and NYSDEC, are unwarranted given no earth-disturbing activities and no development is proposed as part of the relicensing. As a result, they propose to limit the study to field-verification of existing NWI- and NYSDEC-wetland maps within the projects' boundaries during the field surveys. We concur with Eagle Creek Hydro that the level of detail provided by standard wetland delineation methodology exceeds the needs for our environmental analysis [section 5.9(b)(5)], particularly given the level of effort and cost [section 5.9(b)(7)], and we therefore do not recommend it.

Eagle Creek Hydro's PAD includes NWI and NYSDEC wetland maps found in the vicinity of the projects, but field verification of these wetlands has not been performed [section 5.9(b)(4)]. Eagle Creek Hydro's proposed methodology is unclear and suggests that wetland field-verification may only occur within the aquatic habitat survey area (i.e. reservoirs' fluctuation zones). Operation of the projects and recreation activities (e.g. alter hydrology, trampling of vegetation) has the potential to affect all wetlands in the vicinity of the projects, not only those in and near the reservoirs' fluctuation zones [section 5.9(b)(5)]. Therefore, we agree with FWS and NYSDEC and recommend that surveys conducted for the purpose of field verification include all wetlands within the project boundary including the impoundments, Black Lake Creek, Black Brook, the Projects' bypassed reaches, and the Mongaup River to the confluence with the Delaware River.

Eagle Creek Hydro proposes to document the type and GPS locations of wetland boundaries with major discrepancies and large wetland complexes not included in the existing NWI or NYSDEC-wetland maps. However, smaller wetlands are valuable as they also support a variety of wetland-dependent species including federally endangered bog turtles. NWI and NYSDEC wetland maps are produced using digital maps (e.g. aerial imagery, soils maps, etc.) and therefore not precise enough to capture all wetlands potentially occurring in the project area, as noted by NYSDEC. Therefore, we also recommend that the type and GPS location of all missing wetlands, not just large wetland complexes be documented and mapped by Eagle Creek Hydro, as requested by FWS and NYSDEC [section 5.9(b)(4)]. Such wetland corrections and additions would inform our environmental analysis of project effects and recommendations for measures to be included in any license issued for the project [section 5.9(b)(5)].

Study 3 – Fisheries Survey Study

Eagle Creek Hydro's Proposal

The Mongaup River Projects may affect fishery resources by fluctuating reservoir elevations, flows in downstream reaches and through impingement and entrainment at the projects' intakes. Eagle Creek Hydro' study objective is to supplement existing fishery data collected at the projects by conducting fisheries surveys during the late summer/early fall at areas representative of the projects' impoundments, tailraces, bypassed reaches, and downstream reaches, including downstream of the Rio powerhouse to the Mongaup River's confluence with the Delaware River. Specifically, Eagle Creek Hydro proposes to conduct 3 days of electrofishing sampling on the Mongaup River

between the Rio Dam and the river's confluence with the Delaware River and a single day of sampling at each of the following locations:

- Black Lake Creek from Toronto Dam to Cliff Lake and from Cliff Lake Dam to the confluence with the Mongaup River;
- Mongaup River from Swinging Bridge tailrace to Mongaup Falls Reservoir;
- Mongaup River from Mongaup Falls Dam to the Rio Reservoir.

To survey for American eel and American shad at the project, Eagle Creek Hydro proposes to conduct a targeted electrofishing effort on three consecutive days in late-spring on the Mongaup River from Rio Dam downstream to the confluence with the Delaware River.

Reservoir sampling would be conducted at locations selected according to habitat type and provide representative samples in each of the five impoundments and include one day of daytime boat electrofishing, and possibly one overnight gillnet set and/or placement of eel pots in each reservoir.

Eagle Creek Hydro proposes to prepare a report that summarizes the study results, including species richness, relative abundance, size class structure, and habitat use.

Comments on the Study

Study Timing

The boating groups comment that sampling in the late summer/fall alone would not provide sufficient information on various fish species and life stages under varying flow conditions. FWS and NYSDEC also request that a late fall/winter or early spring survey in the impoundments to evaluate seasonal habitat use of fish and susceptibility to entrainment at the projects.

Level of Effort, Methodology, & Existing Information

FWS and NYSDEC note that Eagle Creek Hydro has limited its fish sampling efforts to 11 days at the projects and does not propose to sample Black Brook given the availability of existing fishery information for the projects. The agencies disagree with Eagle Creek Hydro's assessment of the available data and note that data demonstrates a need for a comprehensive fisheries survey at the projects. More specifically, NYSDEC argues that the majority of the surveys cited were species-specific, and did not evaluate the fish communities within the project effected water bodies. As a result, the agencies

recommend that the study plan be modified to utilize multiple types of fisheries sampling gear, at several locations in each reservoir and study reach over multiple seasons to provide a comparison of new data with existing data at the projects and with existing data from other water bodies within New York State. Finally, NYSDEC notes that sampling fish by boat electrofishing is most effective during night and requests that nighttime boat electrofishing be incorporated into the study plan.

Black Brook Fishery Survey

In their comments on the *Black Brook Decommissioning Study*, the agencies' request that Eagle Creek Hydro study the fishery resources within Black Brook to aid in the evaluation of decommissioning.

Spring Spawning Survey

The FWS and NYSDEC are concerned with Eagle Creek Hydro's proposed protection mitigation and enhancement (PM&E) measure to maintain the reservoirs at existing elevations during the spring spawning season in lieu of conducting spring spawning surveys would not provide an opportunity to evaluate the effectiveness of PM&E measures required during the last licensing. As a result the agencies request that spring spawning surveys be conducted.

American Eel and American Shad Sampling

Because the timing of American shad and American eel upstream migrations may differ, the FWS and NYSDEC request the study be modified to include specific sampling periods for American eel and American shad.

Alewife Hydro-Acoustic Study

NYSDEC notes that the projects' reservoirs have alewife populations that support predatory fish and provide forage for bald eagles. NYSDEC and the FWS recommend that Eagle Creek Hydro modify its proposed study plan to include targeted hydro-acoustic surveys to provide information on the abundance and seasonal distribution of alewife in the Projects' reservoirs.

Discussion and Staff Recommendation

Study Timing

Regarding the boating groups' comment that sampling in the late summer/fall alone will not provide sufficient information on various fish species and life stages under varying flow conditions, we understand this comment to be specific to the riverine and bypassed reaches affected by the projects. Typically, the analysis sought by the boating groups is conducted by evaluating potential stream flows and fishery management goals and objectives, and includes considerations for habitat and water quality.

As discussed below under *Study 14 – Bypass/Base Flow Transect Evaluation Study*, Eagle Creek Hydro proposes to evaluate the relevance of the 1988 *Mongaup Basin Instream Flow Study* (Stetson-Harza and Icthyological Assoc. 1988) to determine whether it still accurately represents the existing baseline conditions and can be used to analyze current flow study needs at the projects. The 1988 *Mongaup Basin Instream Flow Study* (or an alternate flow study, if deemed necessary) will provide the information needed to assess the effects of varying flow conditions on fish species and life stages consistent with fishery management goal for the stream reaches [section 5.9(b)(4) and (6)]. The specific species and life stages to be assessed in each reach should be determined through consultation with the NYSDEC [section 5.9(b)(6)]. Therefore, the additional seasonal fishery sampling recommended by the boating groups is not needed at this time.

Regarding the FWS and NYSDEC request that a late fall/winter or early spring survey in project reservoirs to inform a season-specific assessment of entrainment at the projects, as discussed below under *Study 4 – Fish Entrainment/Impingement Study*, the 1992-1993 *Entrainment Studies Mongaup Hydroelectric Projects* (Lawler, Matusky & Skelly Engineers [LMS] 1994) study was designed to provide detailed data on winter entrainment (November to March) at each of the Projects' powerhouses. Our review found that the entrainment data collected by LMS between November 1992 and March 1993 is reliable and sound and would inform an analysis of late-fall, winter, and early spring entrainment at the projects sufficient to inform potential license conditions [sections 5.9(b)(4)]. However, we also found that the LMS study does not characterize the occurrence, relative abundance, and size distribution of fish in proximity to the project intakes during spring, summer, and fall; and subsequently, we recommend that Eagle Creek Hydro conduct two seasonal experimental gill net sample events during spring, summer, and fall (a total of six sampling events) to collect fish residing in proximity to each of the projects' powerhouse intakes. This recommended study plan modification and existing LMS wintertime data will inform a season-specific assessment

of entrainment at the projects [section 5.9(b)(6)]. We discuss our analysis of the LMS study and detailed recommendation below in *Study 4 – Fish Entrainment/Impingement Study*.

Level of Effort, Methodology, & Existing Information

Eagle Creek Hydro's proposed *Study 3 – Fisheries Survey Study* is intended to augment the data of 62 existing fishery surveys that have been conducted for approximately the last 30 years (1998 to 2017, with the exception of 2002 and 2006). NYSDEC argues that none of the existing studies are a comprehensive fisheries survey at the projects and the majority of the surveys were species specific and did not evaluate the fish community as a whole. As a result, the FWS and NYSDEC find that Eagle Creek Hydro's proposed effort and methodology is insufficient to describe the fish communities affected by the project. To correct this apparent deficiency, NYSDEC, in its comments on the proposed study plan, provided protocols that it and the FWS recommend be implemented for sampling the fishery resources at the projects. These documents articulate the level of effort (including gear types) the State of New York recommends for assessing fish communities and species specific sampling efforts.

Study criterion 4 [section 5.9(b)(4)] gives preference to the uses of existing information to satisfy data needs and is intended to identify gaps in the existing data to support a decision of what additional information is needed to assess project effects. Given the number of fisheries studies conducted over the last 30 years it is conceivable that the existing information's is extensive. However, neither Eagle Creek Hydro nor the agencies discuss the existing data in any level of detail that could identify existing data gaps. Proposed studies should clearly explain how the existing information is adequate to satisfy the study goal and objective and articulate the data gaps the proposed study is intended to fill [section 5.9(b)(4)].

In addition, proposed studies should provide detailed methods sufficient for Commission staff and stakeholders to have a clear understanding of the proposal and a reasonable expectation of the information the study will produce. Eagle Creek Hydro's *Fishery Survey Study* does not provide this level of detail [section 5.9(b)(6)]. For example, while Eagle Creek Hydro states that it expects to use backpack and boat electrofishing, gill nets and/or eel pots, there is no commitment to use any of these gear types. Similarly, the RSP does not identify specific habitats that will be sampled or a process for selecting habitats and sample locations or number of sample locations. Instead Eagle Creek Hydro states "(s)ampling will be performed at various locations throughout the reservoirs and stream reaches as can be accomplished within the proposed sample duration noted above." According to the proposed study plan, this would be one

day per reservoir/stream reach, or 11 days in total. While sample days can be used to assess the level of effort associated with passive sample gear (e.g., gill nets and eel pots), this is not an appropriate unit of measure when referencing active sampling techniques (e.g., electrofishing). The acceptable unit of measures for electrofishing is either distance/area, unit run-time, or sample size, depending on the sampling design [section 5.9(b)(6)].

Regarding data collection, Eagle Creek Hydro notes that sampled fish will be identified and counted and "(g)ame species (e.g., trout species, smallmouth bass, walleye, and yellow perch) of up to 30 individuals of game species, as well as species of interest (e.g., American eel), will be weighed and measured." This adds more ambiguity to the study plan and generates the following questions: (1) is it intended that 30 individual game fish in total will be measured and weighed or 30 individuals per species of game fish; (2) is it 30 individuals from each sampling effort, sample site, gear type, sample day, or water body; (3) how would the 30 individual fish be selected to prevent the introduction of bias; and (4) how was it determined that data from 30 individual fish would be sufficient to support a length-frequency distribution/size class structure analysis of the fish communities in project waters.

We do, however, note that Eagle Creek Hydro states it will obtain "representative samples in the five impoundments, tailrace/discharges, downstream reaches, and bypassed reaches," which is our expectation. Eagle Creek Hydro implies that its study as designed will provide the information needed to augment the existing data set. However, given the level of uncertainty embraced in study plan and lack of discussion of the existing information and how it will support the development of a license application, we are unable to determine whether the study as proposed would provide the information needed for our effects analyses of the projects.

Therefore, Eagle Creek Hydro should implement its proposed study, as modified herein. The study report should incorporate and assimilate all of the relevant and existing fisheries data for each of the projects' reservoirs and affected stream reaches. Using new and existing data, the study report should characterize: (1) the current fish species composition, relative abundance (e.g., catch per unit effort [CPUE]), and habitat use; and (2) the current fish size class and structure and condition factor of fish in project affected waters. The report should also articulate the study methods implemented to a level of detail that would support exact replication. Finally, the study report should identify any remaining data gaps.

Black Brook Fishery Survey

FWS and NYSDEC note that Eagle Creek Hydro is not proposing to conduct any fishery surveys in Black Brook and assert that fishery surveys in Black Brook are needed to inform a decommissioning analysis of the Black Brook development. Eagle Creek Hydro asserts that its proposed fishery survey data from the Mongaup River system, in conjunction existing data from a 2016 Black Brook fishery survey conducted by the NYSDEC, is sufficient to describe the fishery.

Using the Mongaup River fishery data to determine the fish community in Black Brook as Eagle Creek proposes is not appropriate. While this data may provide some insight into the species that may be found in Black Brook, it will not be definitive and will not provide information on species composition and relative abundance [section 5.9(b)(6)]. Similarly, the NYSDEC's 2016 Black Brook fishery survey effort was conducted to determine presence/absence of trout. While brook trout, brown trout, and pumpkinseed were documented, this study cannot be relied upon to provide definitive information on the fish community in Black Brook as Eagle Creek Hydro asserts [section 5.9(b)(6)].

Water diversions from Black Brook were discontinued in 1984 when the pipeline that carried water from Black Brook Dam to the Mongaup Falls surge tank failed. Black Brook Dam may be a barrier to upstream fish migration and creates a small impoundment that may influence water quality and effect downstream fishery resources [section 5.9(b)(5)].

In its proposed *Study 11 – Black Brook Dam Decommissioning Study*, Eagle Creek Hydro would evaluate the size of Black Brook Dam, relative to the natural falls at that location [section 5.9(b)(4)]. This information may be used to assess the extent to which removal of Black Brook Dam would benefit upstream fish passage. Our recommended study plan modifications for macroinvertebrate sampling and continuous real-time water temperature monitoring in Black Brook (discussed in studies 11 and 6, respectively) and the proposed in-situ water quality sampling would provide information on the Black Brook development's effects on water quality [section 5.9(b)(4)]. Because flows in Black Brook are no longer altered by the Mongaup Falls Project and the revised study plan (as modified herein), would provide information to evaluate the effects of the Black Brook development on NYSDEC's management goals for Black Brook, detailed information on the existing fish community within Black Brook is not needed to evaluate the decommissioning alternatives for the Black Brook development [sections (b)(4) and (6)].

Spring Spawning Survey

Eagle Creek Hydro proposes to maintain reservoir elevations to keep bass spawning habitats inundated during the spawning season. As a result, Eagle Creek Hydro argues that spring spawning season surveys are not needed as this resource would be protected by the proposed measure. The agencies' argument is valid. If the effectiveness of a current PM&E measure has never been evaluated, implementing the same measure without scrutiny would not be appropriate [sections 5.9(b)(4), (5), and (6)]. However, the goal of Eagle Creek Hydro's *Study 2 – Aquatic Habitat Assessment Study Plan* is to identify, map, and assess potential project effects on aquatic habitats within each of the five project reservoirs. Eagle Creek Hydro's *Study 1 – Reservoir Water Lever Fluctuation Study Plan* will provide information on project operational effects on the aquatic habitats within the reservoirs. Fishery survey data collected from this study (as modified herein), will provide information on the relative abundance and size/age structure of the fish community within the reservoirs [section 5.9(b)(4)]. These data should provide the information needed to support an evaluation of current conditions in the reservoirs and the adequacy of the proposed measure to maintain reservoir elevations and protect bass spawning habitat during the spring [section 5.9(b)(6)] and without the added cost of spring spawning surveys [section 5.9(b)(7)].

American Eel and American Shad Sampling

American Eel

If timed correctly, Eagle Creek Hydro's proposed sampling effort to conduct three concurrent days of electrofishing efforts in the Mongaup River downstream of Rio dam may provide information on the presence/absence of American eel in the Mongaup River downstream of Rio Dam. However, this information would be of little added benefit given: (1) the known presence of eel in this reach; and (2) the documented occurrence in the upstream Mongaup Falls Reservoir [section 5.9(b)(4)]. Nor would it provide any new information regarding the project effects on the species [section 5.9(b)(4)]. Currently, no information exists about where upstream migrating American eels might be concentrating below the Rio Project or if they are seeking upstream passage [section 5.9(b)(4)]. However, given the known presence of this species, its migratory life history, its historic range in the Mongaup River upstream of Mongaup Falls, it is likely that the Rio Project impedes or blocks upstream migration of American eel [sections 5.9(b)(4) and (5)]. As a result, Eagle Creek Hydro should, after consultation with the FWS and NYSDEC, conduct systematic surveys for upstream migrating eel at a minimum, at the Rio Project's tailrace, the minimum flow turbine tailrace, and at the base of Rio Dam. The study should be designed to identify areas of eels staging in pools or attempting to ascend

wetted structures and, if appropriate, inform an American eel upstream passage feasibility assessment (discussed in *Section 3 - Upstream and Downstream Fish Passage Study*).

The study should include visual surveys at night, at least once per week, on foot (wading) or from a boat from spring through fall and target areas where eels are likely to congregate below the Rio Dam, powerhouse tailraces, and within the bypassed reach, and at locations of significant leakage. Data collected should include location, observation of eels (presence, absence, numbers, and estimated sizes), time and date of observation, field notes on weather conditions, and moon phase. Other data that should be recorded include notes on project operations and flow data during sampling.

In addition, baited eel pots should be deployed in the project's tailraces, bypassed reach, and at the base of the Rio Dam and fished once per week (overnight sets) for the duration of the study. The number and specific location of the eel pots should be developed in consultation with the agencies and include other locations that upstream migrating eels may congregate. At a minimum, the data collected should include location, number captured, relative sizes, and time and date. Eels collected from baited eel pots should be marked in an effort to identify individuals who may have already been captured to avoid overestimating eel abundance. Any recaptures should be recorded.

We anticipate the implementation of this study would require two individuals to conduct sampling on two days per week for the 26 week duration of the study period and cost about $60,000 [section 5.9(b)(7)].

American Shad

If timed correctly, Eagle Creek Hydro's proposed sampling effort to conduct three concurrent days of electrofishing efforts in the Mongaup River downstream of Rio dam may provide information on the presence/absence of American shad in the Mongaup River downstream of Rio Dam. Currently no data on the presence of American shad has been provided [section 5.9(b)(4)]. While Eagle Creek Hydro proposes to conduct the sampling on three consecutive days between June 1 and July 15 the short duration of the survey period could be problematic because the shad spawning migration timing may vary for a multitude of reasons including water temperature and flow conditions.[section 5.9(b)(6)]. However, we note that Eagle Creek Hydro proposes to also consult with the NYSDEC on the timing of the shad spawning run and likely presence below Rio Dam. This consultation should help pin-point survey efforts, so we agree with this approach. Until such time that American shad are documented in the Mongaup River, a targeted American shad study, as requested by the agencies, is not warranted [section 5.9(b)(5)]. However, we note that our recommended America eel survey, discussed above, would

also provide an opportunity for incidental observations of American shad at the Rio Project and any observations should be reported [section 5.9(b)(6)]. Therefore, when developing the American eel study, Eagle Creek Hydro should include a provision to document any incidental observations of American shad. Inclusion of this provision in the American eel study should not affect the cost of that study [section 5.9(b)(7)].

Alewife Hydro-Acoustic Study

NYSDEC's and FWS's request for hydro-acoustic surveys of alewife populations and distribution in the project' reservoirs is essentially a study request. Because Eagle Creek Hydro is not proposing to conduct this study we discuss it below in Section 3 – *Studies Requested but Not Adopted by Eagle Creek Hydro*.

Study 4 – Fish Entrainment/Impingement Study

Eagle Creek Hydro's Proposal

With the exception of American eel, Eagle Creek Hydro asserts that the existing LMS study provides the information necessary to evaluate project entrainment effects on fishery resources at the Mongaup River Projects. Eagle Creek Hydro proposes to augment the LMS study results with a qualitative desktop analysis of impingement and entrainment risk and estimates of mortality for American eel at the Rio Project. Eagle Creek Hydro proposes to use standard methodology including a review of the EPRI database on entrainment studies conducted at other hydroelectric projects. Eagle Creek Hydro proposes to estimate American eel mortality using standard mortality assessment practices.

Comments on the Study

Adequacy of Existing Entrainment Study

The FWS and NYSDEC note that the stated goal of the 1992 and 1993 entrainment study was a qualitative, presence-based analysis of entrainment at the Mongaup Projects and entrainment of alewife in winter months at the Rio and Swinging Bridge Projects. As such, the agencies state that the results of the study do not provide useful or reliable information on potential fish entrainment and mortality at the projects. As a result, the agencies reiterate their request for a *Fish Entrainment and Mortality Study*, which would include the use of literature reviews and site-specific data to conduct a desktop analysis of project effects.

Fish Protection, and Upstream and Downstream Passage Studies

FWS and NYSDEC note that Eagle Creek Hydro, in its revised study plan, removed efforts to evaluate upstream eel passage at the projects that were included in its proposed study plan. As a result, the agencies reiterate their previous request for *Fish Protection, and Upstream and Downstream Passage Studies*, which would include the use of literature reviews, discussions with fishway engineers, and site-specific data to conduct a desktop analysis of project effects and potential fish passage/protection solutions.

Discussion and Staff Recommendation

Adequacy of Existing Entrainment Study

The FWS and NYSDEC raise several concerns with the usefulness and reliability of the existing LMS study for the following reasons: (1) study was conducted in a drought year; (2) the study was seasonally biased for winter; (3) collection efficiencies at the projects were poor; (4) conclusions drawn by the study are flawed; (5) the survival estimate was based on the limited number of entrainment mortality studies available at that time and no in-situ mortality data was included from the field study.

Eagle Creek Hydro argues that site-specific data collected during the LMS study is sufficient to support its relicensing of the projects and is more valuable than using data from other locations, as requested by the agencies. The licensee notes that several of the issues associated with the LMS study and identified by the agencies are common in field entrainment studies, including studies that would be used in the agencies requested desktop study.

The LMS study was conducted between November 1992 and October 1993. The study was conducted to describe the species composition, relative abundance, and size of entrained fish and to estimate the total annual entrainment specific to the Mongaup Falls Project. The purpose of the winter entrainment sampling at the Swinging Bridge and Rio Projects was to characterize the occurrence, relative abundance, and size distribution of alewife entrained. Reservoir profile data [dissolved oxygen (DO) and water temperature] were collected from each reservoir in the vicinity of the intakes and used to predict the potential for entrainment of fish based on DO and depth (based on species' temperature preference). As indicated in Figure 8-1 of the revised study plan, sampling occurred at each of the projects and each of the units between November 1992 and March 1993. Consistent with the study's purpose, only the Mongaup Falls Project was sampled

between April 1993 and October 1993. However, given the unusually dry summer conditions that year, generation at the Mongaup Falls Project was limited and no entrainment sampling was conducted in late-June and July, and only one sample event was conducted in August [section 5.9(b)(4)].

The LMS study was designed to provide detailed data on winter entrainment (November to March) at each of the projects. Predictions of entrainment potential during the summer months at the Swinging Bridge and Rio Projects were relied upon given the assumption that the reservoirs stratify and temperature and DO would deter fish presence near the projects' intakes. While DO may be used to determine the absence of species if anoxic conditions below a species lethal tolerance level exists, DO and water temperature cannot be used to predict entrainment rates. The LMS study indicates that while DO levels in the vicinity of the intakes were depressed after mid-June, and would likely deter the presence of fish in the area, none were at a level lethal to fish that would decisively exclude them from the intake zone [section 5.9(b)(4)]. In addition, as indicated by the agencies and confirmed in the LMS study, dry summer conditions significantly curtailed project operations. Low flows and limited project operations would reduce the turnover/exchange rate within the reservoirs and likely influence the water temperature and DO concentration the study relied upon to predict entrainment potential during the summer months [section 5.9(b)(4)]. As a result, the LMS study results, if applied to the projects, would likely underestimate entrainment potential from June through mid-October [section 5.9(b)(6)]. As a result much of the LMS study (June – October) was conducted under anomalous environmental conditions and those conditions likely had a direct effect on the study's results [sections 5.9(b)(4) and 5.15(d)(2)].

The LMS study also notes a limitation in the available literature for estimating turbine mortality at the projects. For example, the rotational speed of the Mongaup River Project's turbines are higher than the surrogate projects used. To compensate, the LMS study conservatively relied upon survival values from the lower end of the range of those reported by the Electric Power Research Institute (EPRI) [section 5.9(b)(4)]. While this is a reasoned approach when data is limited, the current volume of literature for estimating turbine mortality at hydroelectric projects is greater than in 1994 [sections 5.9(b)(4) and (6)]. As a result, the study's turbine survival estimates would benefit from an updated review of existing literature developed during the last two decades [section 5.9(b)(6)].

While we find that the LMS study entrainment data collected between November 1992 and March 1993 to be reliable and sound, assumptions used to develop summer-time study results were likely influenced by drought conditions during the study's implementation. As a result, and for the reasons discussed above, Eagle Creek Hydro

should conduct a desktop entrainment study for each of the projects as requested by the agencies and include an updated mortality/turbine survival analysis for each project. Because the LMS study does not characterize the occurrence, relative abundance, and size distribution of fish in proximity to the Rio and Swinging Bridge projects between April and October and data collected at the Mongaup Falls Project was collected under anomalous conditions [section 5.9(b)(4)], Eagle Creek Hydro should modify *Study 3 – Fisheries Survey Study* to include two seasonal experimental gill net sample events during spring, summer, and fall (a total of six sampling events) to collect fish residing in proximity to the projects' powerhouse intakes [sections 5.9(b)(4) and (6)]. We estimate the cost of our recommended desktop entrainment study and the gillnet sampling effort to be $70,000 [section 5.9(b)(7)].

Upstream and Downstream Fish Passage Feasibility Study

Regarding the FWS' and NYSDEC's request for their *Upstream and Downstream Passage Study*, we discuss this study separately in section 3 *Studies Requested But Not Adopted by Eagle Creek Hydro.*

Study 5 – Water Quality Study

Eagle Creek Hydro's Proposal

Eagle Creek Hydro proposes to supplement the existing water quality dataset by collecting continuous water temperature and DO between June 1 and September 30, at 15-minute intervals within each of the project reservoirs (at a location in the vicinity of project outlet works), and at the following eight stream locations:

- Black Lake Creek at the discharge from Toronto Reservoir;
- Black Lake Creek immediately upstream of its mouth at Cliff Lake Reservoir;
- Black Lake Creek at the discharge of Cliff Lake Reservoir;
- Black Lake Creek immediately upstream of the confluence with the Mongaup River;
- Mongaup River at the Swinging Bridge powerhouse;
- Mongaup River at the Mongaup Falls powerhouse;
- Mongaup River at the upstream extent of the Rio Project's bypassed reach; and
- Mongaup River immediately downstream of the Rio Project's tailrace.

Eagle Creek Hydro also proposes to collect in-situ surface water quality data (DO, pH, specific conductance) at each of these locations to a depth of 2-4 feet; and weekly

reservoir profile data (temperature and DO) at one-meter intervals from the water surface to a depth two meters below the elevation indicating anoxic conditions or the bottom of the reservoir, whichever is encountered first.

Eagle Creek Hydro proposes to compare and evaluate current and historic water quality data to determine change-over-time and include a graph of stream flows at the USGS streamflow gages 01432900 and 01433500 during the study period.

Comments on the Study

Stream Water Quality Monitoring Locations

Regarding stream reaches, FWS and NYSDES recommend that Eagle Creek Hydro collect the proposed water quality data at the upper and lower ends of the Mongaup Falls and Rio Projects' bypassed reaches. The boating groups appear to support this recommendation as they raise concerns that water quality is likely to change as it moves downstream through the bypassed reaches. The agencies also recommend the addition of a monitoring station just upstream of the Mongaup Falls Reservoir. The agencies argue that monitoring locations that bracket the study reaches, as requested here, are needed to assess changes to water quality within the reaches.

Reservoir Water Quality Monitoring

FWS and NYSDEC recommend that water quality profile data be collected from the entire water column (surface to bottom) within the reservoirs to be consistent with the 1994 LMS entrainment study.

Stream Flow and Generation Data

FWS and the NYSDEC request that generation data at all powerhouses and stream flow release data from Toronto Reservoir be provided to support an evaluation of the effects of flow on water quality.

Duration of Water Quality Monitoring

FWS and NYSDEC request that Eagle Creek Hydro collect water quality data throughout the year to support an assessment of how water quality may affect fishery resources throughout the year.

Discussion and Staff Recommendation

Stream Water Quality Monitoring Locations

Rio and Mongaup Falls Bypassed Reach

Although Eagle Creek Hydro proposes to monitor water quality in the upper extent of the Rio bypassed reach, it does not propose to monitor water quality within the Mongaup Falls bypassed reach or in the lower extent of the Rio bypass reach. Instead, Eagle Creek Hydro explains that its proposed sample location in proximity to the project intake within the Mongaup Falls Reservoir (P9) would provide water quality data that is representative of water discharged from the reservoir and into the Mongaup Falls Bypassed Reach [sections 5.9(b)(4) and (6)]. In addition, Eagle Creek Hydro states that its proposed sample locations P10 and P13 on the Mongaup River just below the Mongaup Falls and Rio tailrace discharges, respectively, would provide data that is representative of the water quality at the lower extent of their respective bypassed reaches (when the projects are not generating).

Collectively, Eagle Creek Hydro's proposed approach to use the reservoir water quality data as a surrogate to for data from the upper extent of the bypassed reach and data from it proposed site just below the Mongaup Falls powerhouse would support an analysis of longitudinal changes to water quality within the bypass reach when the project is not generating [section 5.9(b)(6)]. Similarly, using data collected at station P13 and comparing it to water quality data collected from the upper Rio bypassed reach would support an analysis of longitudinal changes to water quality there [section 5.9(b)(6)]. However, the agencies argue, water quality data collected at the proposed P10 and P13 locations downstream of the tailraces would no longer be representative of water within the lower extent of the bypassed reaches and subsequently result in data gaps when the projects are generating [section 5.9(b)(4)].

We agree with the agencies on this issue. The proposed approach would result in data gaps that would hinder an analysis of longitudinal changes to water quality within the Mongaup Falls and Rio bypassed reaches. However, if the projects' generation schedules are sufficiently variable and provide a broad range of dates, times, and durations of non-generation periods that result in a sufficient sample size when data from P10 and P13 represents the water quality within the lower extent of the bypassed reaches, the proposed approach could provide the necessary information at a reduced the level of effort and study cost [sections 5.9(b)(6) and (7)]. As a result, we do not recommend the agencies' request for a water quality monitoring station within the upper and lower extent

of the Mongaup Falls bypassed reach or in the lower extent of the Rio bypassed reach, at this time.

Mongaup River Upstream of Mongaup Falls Reservoir

Although Eagle Creek Hydro proposes to monitor water quality in the Mongaup River at the Swinging Bridge Project's tailrace (P8), it does not propose to monitor water quality in the Mongaup River immediately upstream of the Mongaup Falls Reservoir at the end of this affected reach. The agencies assert that adding a water quality monitoring station to the lower extent of this reach is needed to support an assessment of project effects on water quality within the reach. Eagle Creek Hydro argues that water quality data collected from the proposed monitoring location P8 at the Swinging Bridge powerhouse discharge and at its proposed location P6 on Black Lake Creek immediately upstream of the confluence with the Mongaup River (and upstream of Mongaup Falls Reservoir) would be representative of the requested location.

Stream flows within the reach of the Mongaup River between Swinging Bridge Reservoir and Mongaup Falls Reservoir are highly regulated and fluctuate from the minimum flow requirement of 100-cubic-feet-per-second (cfs) to peak generation flows of 1,015-cfs [section 5.9(b)(4)]. The volume of water and travel time within stream reaches may cause the water temperature and DO within the downstream reaches to change. As a result, project operations have the potential to affect water quality within the Mongaup River between Swinging Bridge Reservoir and Mongaup Falls Reservoir [section 5.9(b)(5)] and we are not aware of any water quality data for the requested location that supports Eagle Creek Hydro's claim that data collected upstream at stations P6 and P8 would be representative of the water quality at the requested downstream location [section 5.9(b)(4)]. Therefore, in order to evaluate potential project effects on water quality within the reach of the Mongaup River between Swinging Bridge Dam and the Mongaup Falls Reservoir, Eagle Creek Hydro should include a water quality monitoring station within the Mongaup River immediately upstream of the river's mouth with the Mongaup Falls Reservoir. We estimate this recommendation will increase the cost of this study by $5,000.

Black Brook

We note that the Eagle Creek Hydro is proposing to collect in-situ water quality data (DO and temperature) during the field reconnaissance activities. However, it's unclear where this water quality data will be collected, as Eagle Creek Hydro merely specifies "from shore in four locations." In-situ water data should be collected from a location immediately upstream of the impoundments influence and immediately

downstream of Black Brook Dam, with the remaining two sampling locations to be along the impoundment [section 5.9(b)(6)]. Because we are not recommending any additional effort associated with the in-situ water quality data collection there would be no additional cost per this recommendation [section 5.9(b)(7)]. We note, however, that Black Brook hosts a cold water trout fishery [section 5.9(b)(4)]. The presence of the shallow impoundment behind Black Brook Dam may contribute to warm water temperatures that affect this fishery [section 5.9(b)(5)]. Understanding the influence of Black Brook Dam and its effects on aquatic habitats downstream would be needed for a decommissioning analysis that includes dam removal [section 5.9(b)(4)].

Eagle Creek Hydro's proposed in-situ water quality data will be collected during the "2018 field season" and only provide data from a single snapshot in time. We recognize that Black Brook water quality was collected in conjunction with the *1988 Mongaup Basin Instream Flow Study* and the project has not altered flows in Black Brook since 1984 when the development's penstock failed [section 5.9(b)(4)]. However, sedimentation and filling of the shallow impoundment behind Black Brook Dam during the last 30-years may have altered the development's influence on water quality in Black Brook, rendering the 1988 water quality data unreliable [Section 5.9(b)(4)]. As a result, the proposed water quality data collection and the 1988 data alone would not provide sufficient information to evaluate the summer seasonal effects of the Black Brook impoundment on water temperature in the downstream reach. Therefore, *Study 5 – Water Quality Study Plan* should be modified to include real-time water temperature monitoring at the two locations specified above (above and below the impoundment). This data would provide information on the summer seasonal effects (if any) of the Black Brook impoundment on the water temperatures in Black Brook downstream and subsequently on aquatic habitat and coldwater fishery located there [section 5.9(b)(6)]. This information is needed to inform the decommissioning with dam removal alternative analysis and the added cost of about $5,000 is justified [sections 5.9(b)(4) and (7)].

Reservoir Water Quality Monitoring

Eagle Creek Hydro proposes to collect reservoir profile data from the surface to a depth of two meters below where anoxic conditions are documented or the reservoir bottom, whichever is encountered first. It is unclear why the agencies find it necessary to collect reservoir profile data to the bottom when anoxic conditions are present. . Knowing the location of the anoxic conditions within the reservoir would inform other study results [e.g., *Study 3 – Fishery Survey Study* and our recommended desktop entrainment study (discussed in *Study 4 – Fish Entrainment/Impingement*)] and subsequent potential license conditions (e.g, fish screening, project operations, reservoir aeration, etc.) [sections 5.9(b)(4) and (5)]. Habitat conditions below this level will no

support fishery resource and as such the additional data requested is not needed [sections 5.9(b)(6) and (7)]. As a result, we recommend Eagle Creek Hydro collect reservoir profile data as it proposes until it records a minimum of two consecutive DO readings less than 1.0 mg/l.

Stream Flow Data

Eagle Creek Hydro proposes to incorporate stream flow data from two USGS streamflow gages (gage numbers: 01432900 and 01433500). The first gage is located on the Mongaup River in Mongaup Valley, New York, upstream of the projects' influence and the second on the Mongaup River downstream of the projects and immediately below the Rio Project's tailrace.

The project affected stream reaches are highly regulated and subject to peaking generation flows and/or minimum flow releases. While collecting DO and temperature data within these affected stream reaches would describe the existing environment, without concurrent reach-specific stream flow data it would not be possible to evaluate how flow changes due to project operations affect temperature and DO within the affected reaches [section 5.9(b)(4)]. Correlating reach specific project flows data and concurrent water quality data will support an analysis of project effects on aquatic resources and inform potential license conditions [sections 5.9(b)(5) and (6 Because each of the subject stream reaches are regulated by Eagle Creek Hydro, it should be in possession of the data to calculate real-time stream flows within the subject reaches. As a result, Eagle Creek Hydro should report real-time stream flow data on a 15-minute interval, consistent with its water quality data collection efforts. The study report should include an analysis that evaluates project operational effects (flow) on water quality at each of the water quality monitoring stations within the subject stream reaches. Because the stream flows data and/or generation data to calculate real-time stream flow data for the subject reaches should be readily available to the Eagle Creek Hydro, the cost of providing this information and the recommended analysis would be minimal [section 5.9(b)(7)].

Duration of Water Quality Monitoring

Eagle Creek Hydro asserts that augmenting existing water quality data with 2018 data collected from June through September will be sufficient to evaluate water quality relative to the projects' operations and applicable state water quality standards. The water quality monitoring requested by FWS and NYSDEC would include a minimum of one year continuous real-time water temperature and DO monitoring and monthly

sampling of pH, turbidity, and conductivity. The agencies assert that this information is needed to assess how water quality may affect fishery resources at the projects.

The existing water quality data provided will be useful to identify trends in water quality when evaluated in context with the new data collected by the proposed study. However, of the existing water quality data provided, only the 1994 LMS study sampled water quality in the winter and only on a single day in January and February [section 5.9(b)(4)]. That said, it is unclear how additional wintertime water quality sampling, when water in the reservoirs should be nearly isothermal, would inform an analysis of project effects on fishery resources as suggested by the agencies. We note that, the LMS study showed that temperature stratification within the reservoirs started to develop in early May [section 5.9(b)(4)]. Due to this, Eagle Creek Hydro's proposed sample period from June to September may not record water quality from the reservoirs when they are in an isothermal state before a thermocline is established [section 5.9(b)(6)]. Water quality data collected before the reservoirs' establish a thermocline should closely represent winter conditions. However, water quality data during the transition period from an isothermal state to a stratified state and back would provide information that support our recommended desktop entrainment study and associated gillnet sampling near the project intakes. As a result, Eagle Creek Hydro should conduct its proposed water quality monitoring (as modified herein) from ice-off in the spring until the dissolution of the thermocline in the fall. We anticipate this would extend the study period from about mid-April through October. While this modification would not result in any significant cost increase associated with the proposed continuous water temperature and DO monitoring, it could result in up to 11 additional reservoir profile sampling events, increasing the study cost by approximately $30,000 [section 5.9(b)(7)]. However this information is directly correlated to the projects' effects on water quality within the reservoirs and on subsequent downstream reaches [section 5.9(b)(5)]. We do not, however, recommend the year-round continuous or additional monthly water quality monitoring requested by the agencies as data collected pursuant to our recommended modification should be sufficient to evaluate project related effects on water quality and subsequently on their fishery resources (the agencies' stated objective for their request).

Study 6 – Macroinvertebrate and Mussel Survey

Eagle Creek Hydro's Proposal

The projects' operations alter reservoir elevations and flows within downstream aquatic habitats. These alterations likely influence and effect aquatic macroinvertebrate and mussel communities residing in these habitats. As a result, Eagle Creek Hydro

proposes to survey and evaluate the macroinvertebrate community in project affected waters and mussel communities in the projects' bypassed reaches and downstream riverine reaches. Eagle Creek Hydro proposes to select sample sites within the reservoirs based on locations of the dominant habitat of each reservoir. For the riverine and bypass reach sample site locations, Eagle Creek Hydro proposes to establish three sample sites in each of nine reaches, representing riffle mesohabitat and two non-riffle mesohabitats (i.e., run and pool). Eagle Creek Hydro does not propose to sample macroinvertebrates within Black Brook in support of a decommissioning analysis for the Black Brook Dam development.

Eagle Creek Hydro proposes to conduct mussel surveys along four 100-foot linear transects within the project stream reaches and along two similar transects in the Mongaup River from Rio powerhouse tailrace downstream to the Delaware River.

Comments on the Study

FWS and NYSDEC request two modifications to the proposed *Macroinvertebrate and Mussel Survey* study. First, they request that all mussel beds on the Mongaup River downstream of the Rio Powerhouse to the confluence with the Delaware River be surveyed. The agencies note that the aquatic habitat in this reach of the Mongaup River is connected with the Delaware River and as a result, the state-listed mussel species and the federally listed dwarf wedge mussel (*Alasmidonta heterodon*) may reside there. Second, the agencies request that the northern macroinvertebrate survey location within Cliff Lake be moved to a unique habitat area upstream of the tunnel diversion to Swinging Bridge.

In addition, in their comments on the *Black Brook Decommissioning Study*, the agencies' request that Eagle Creek Hydro study macroinvertebrates within Black Brook to aid in the evaluation of decommissioning.

Discussion and Staff Recommendation

Mongaup River Mussel Surveys

The Mongaup River downstream of the Rio Project's tailrace is subject to project operational effects that may include varying water velocities, depths, temperatures, and other parameters [section 5.9(b)(5)]. Eagle Creek Hydro's proposal to survey two 100-foot linear transects within the 4.6-mile reach from the Rio tailrace to the mouth of the Mongaup River would not specifically target mussel beds as requested by the agencies and would represent a sample length of about 1 percent of the total length of this reach

[section 5.9(b)(6)]. Given the status of the federally listed dwarf wedge mussel and its confirmed presence in the Delaware River, conducting a sufficiently robust survey of mussel habitat is appropriate and, as a result, the Eagle Creek Hydro's proposed approach is inadequate [section 5.9(b)(6)]. In contrast, not knowing how many there are or the extent of all the mussel beds within the reach, the agencies' request census may be excessive, and could require a very high level of effort beyond what is needed to conform to the generally accepted practice within in the scientific community of sampling subsets [sections 5.9(b)(6) and (7)].. As a result, rather than have Eagle Creek Hydro conduct a survey of all mussel beds in the entire reach, or its proposed linear surveys, we recommend that Eagle Creek Hydro: (1) locate and map all mussel beds located within the Mongaup River between the Rio tailrace and its confluence with the Delaware River; and (2) select a statistically sound representative sample of the mapped mussel beds for detailed mussel surveys. The mussel beds to be surveyed should be selected in consultation with the FWS and NYSDEC. While we don't anticipate this recommendation would increase the cost of survey efforts, we estimate the cost associated with our recommended mussel bed mapping effort would increase study costs by $10,000.

Macroinvertebrate Sample Locations

Cliff Lake

Eagle Creek Hydro's proposal to select macroinvertebrate reservoir habitats based on the dominant habitat type would exclude a survey for macroinvertebrates within the unique habitat within Cliff Lake located upstream of the tunnel outfall from Toronto Reservoir as requested by the agencies [section 5.9(b)(4)]. The agencies' macroinvertebrate study request did not identify specific locations for macroinvertebrate surveys within the projects' reservoirs. They did note that macroinvertebrate communities are linked to water quality and provide a food base for fish. However, no justification for sampling the unique habitat vs the dominant habitat in Cliff Lake was provided [section 5.6(b)(6)]. Sampling the dominant habit would provide a more comprehensive evaluation of the available food base for fish and water quality in Cliff Lake compared to a small localize unique habitat type [section 5.9(b)(6)]. While we acknowledge that there would be no difference in cost by substituting one sample location for another, we question the value of the data that would be obtained from the unique habitat in Cliff Lake [section 5.9(b)(6) and (7)]. As a result, we do not recommend the agencies' requests to locate the Cliff Lake macroinvertebrate sample site to the unique habitat area upstream of the tunnel diversion to Swinging Bridge Reservoir.

Black Brook

In their comments on *Study 11 – Black Brook Dam Decommissioning Study Plan* (discussed below) and their initial study requests, the FWS and the NYSDEC ask that Eagle Creek Hydro survey for macroinvertebrates upstream of, within, and downstream of the Black Brook Dam and impoundment. Eagle Creek Hydro is not proposing to sample macroinvertebrates within Black Brook or the Black Brook impoundment.

Aquatic macroinvertebrates are indicators of water quality and provide a food source to fishery resources. Black Brook hosts a cold water trout fishery [section 5.9(b)(4)]. The presence of the shallow impoundment behind Black Brook Dam may affect water quality and influence macroinvertebrate communities and subsequently the fishery resources downstream of Black Brook Dam [section 5.9(b)(5)]. Understanding the influence of the Black Brook Dam development and its effects on aquatic habitats downstream is needed for our decommissioning analysis that will include a dam removal alternative and inform potential license conditions [sections 5.9(b)(4) and (5)]. Macroinvertebrate sampling within Black Brook was conducted as part of the *1988 Mongaup Basin Instream Flow Study* [section 5.9(b)(4)]. While the project has not altered flows in Black Brook since 1984 when the development's penstock failed, changes in the watershed (e.g., development, logging, land/use) during the last 30 years have likely altered the water quality and the macroinvertebrate community, rendering the 1988 macroinvertebrate data unreliable [Section 5.9(b)(4)]. As a result, the existing 1988 macroinvertebrate data is not sufficient to assess the effects of the Black Brook impoundment on macroinvertebrates and subsequently water quality in Black Brook. Subsequently, Eagle Creek Hydro should modify this study to include three additional macroinvertebrate sample locations (immediately upstream of the impoundment, within the impoundment, and immediately downstream of the impoundment). Sample locations upstream and downstream of the impoundment should be located in similar mesohabitats to support a direct comparison of the macroinvertebrate communities present [section 5.9(b)(6)]. We estimate the level of effort and cost associated with this modification would increase the cost of the study by $15,000.

Study 7 – Recreation Facility Inventory, Recreation Use and Needs Assessment, and Reservoir Surface Area Assessment Study

Eagle Creek Hydro's Proposal

Eagle Creek Hydro proposes to conduct a recreation facility inventory and a recreation use and needs assessment at all three projects. The recreation facility

inventory will use a standardized site inventory form that Eagle Creek Hydro will use to record information on the general condition of the facilities and the available amenities. The recreation use and needs assessment will consist of recreation user spot counts, an on-site survey of recreation users, and existing recreation use data (i.e. data from other sources, such as whitewater sign-in logs and existing NYSDEC recreation use information, where applicable). Eagle Creek Hydro proposes to collect recreation user data from April 2018 through October 2018, omitting the winter season.

Comments on the Study

Winter Sampling Days

HOOT, FWS, Park Service, and NYSDEC request that Eagle Creek Hydro include winter sampling days in the recreation use and needs assessment.

Region-wide Survey

HOOT and Park Service request that Eagle Creek Hydro deploy a large-scale survey that samples the entire region to obtain information related to recreation at the projects. HOOT justifies this request, in part, based on their assertion that the projects have a high level of recreation use, and that the projects provide regionally significant recreation opportunities.

Modification to Survey Instrument

HOOT requests that Eagle Creek Hydro revise question 14 in the recreation survey proposed in the RSP to include a comparative, rather than numeric, metric.

Visual Simulations

HOOT requests that Eagle Creek Hydro supplement the proposed recreation survey to address the effects of reservoir level fluctuations on recreation demand by including visual simulations of different reservoir levels and asking survey respondents to rate the acceptability of these different elevations.

Sample Size

HOOT comments that Eagle Creek Hydro should ensure their data collection efforts produce an adequate number or responses, and that Eagle Creek Hydro should be prepared to conduct an additional year of sampling if they fail to achieve an adequate

sample size. HOOT does not, however, indicate what sample size they believe will be sufficient.

Discussion and Staff Recommendation

Winter Sampling

Winter recreation use is known to occur at the project, but the amount of detailed existing information on recreation use at the projects is limited. In the scoping meeting and study plan development meetings, NYSDEC confirmed that Bald Eagle viewing at the projects is known to occur, primarily during the winter months, and the project has at least one trail that provides winter recreation opportunities [section 5.9(b)(4)]. Therefore, Eagle Creek Hydro should include winter sampling days for both the spot counts and recreation user surveys. It is expected that these additional sampling days will not result in a substantial increase in the level of effort or cost for the study. Eagle Creek Hydro should revise the RSP to include winter sampling days [section 5.9(b)(7)].

Region-wide Survey

According the to the PAD, 2015 FERC form 80 data indicates the projects received 11,653 total annual user days, which the Commission defines as any visit to any recreation site at a project within a 24 hour period. Therefore, contrary to HOOT's assertion, the projects do not currently appear to receive a large amount of recreation use. Even if every user day recorded in the form 80 data represented a distinct individual (which it clearly would not, as some users, especially local residents, could visit the project multiple times per year), this level of use represents only a maximum of 2.57 percent of the population of Sullivan and Orange Counties [section 5.9(b)(4)]. Therefore, it seems unlikely that the data gained from a broader survey of non-users would provide any information to inform staffs environmental analysis [section 5.9(b)(5)]. Furthermore, although neither HOOT nor the NPS provide estimates of the cost to conduct such a study, the cost to conduct this study would not be justifiable in light of the low levels of use at the projects and their likely limited regional significance [section 5.9(b)(7)].

Modification to Survey Instrument

Regarding HOOT's suggestion to modify the recreation use and needs survey question 14 to include a comparative, rather than numeric, measure, because survey respondents are not likely to be aware of the exact reservoir level at any given time. Changing question 14 to a Likert scale format ranging from "very low" to "very high" will result in less confusion and better data than a numeric response, and these responses

could be correlated with the actual reservoir levels when the data is analyzed [section 5.9(b)(6)]. Therefore, Eagle Creek Hydro should modify question 14 to a Likert scale format ranging from "very low" to "very high."

Visual Simulations

The results of the modified recreation user survey, in conjunction with the reservoir surface area assessment, should provide information to evaluate the projects' effects on recreation, and the *Study 1 – Reservoir Water Level Fluctuation/Operation Model Study*, as discussed above, will allow different operational scenarios to be evaluated in terms of reservoir levels. The results of this study (*Study 7 – Recreation Facility Inventory, Recreation Use and Needs Assessment, and Reservoir Surface Area Assessment Study*) will generate data on recreation users' assessments of reservoir levels, and the available reservoir surface area for the range of possible reservoir levels. This information will then be used, along with studies of the other resources (i.e. fisheries, whitewater flow releases, power generation, etc.), to inform the development of different possible operating scenarios, which will be incorporated into iterations of the operations model. Therefore, visual simulations of different operational scenarios in the recreation use and needs survey are not necessary [section 5.9(b)(4)].

Sample Size

Regarding the sample size of the recreation use and needs survey, typically, for studies related to outdoor recreation, a target sample size of approximately 400 responses is sufficient (Vaske, 2008). Eagle Creek Hydro should, therefore, ensure that they design their sampling schedule to achieve this generally accepted target sample size of approximately 400 responses. If Eagle Creek Hydro does not achieve a sufficient number of responses, then the study should be continued in a second season to ensure a sufficient sample size [section 5.9(b)(6)].

Study 8 – Whitewater Boating Assessment Study

Eagle Creek Hydro's Proposal

Eagle Creek Hydro proposes to conduct a whitewater boating study on the bypassed reach below the Rio dam and the lower reach of the Mongaup River below the Rio powerhouse (lower Mongaup reach) using the methods outlined by Whittaker, Shelby, and Gangemi (2005). The study would use a phased approach consisting of three levels that progress from a desktop analysis to a controlled flow assessment. Eagle Creek

Hydro proposes to conduct a Level 1 analysis that consists of a desktop study, summary of hydrology information, and structured interviews of boaters and submit a report with the results that includes recommendations regarding the necessity of a Level 2 and/or Level 3 study.

Comments on the Study

AW, AMC, and KCCNY (boating groups) state that Eagle Creek Hydro's study plan is inadequate because it does not guarantee that Eagle Creek Hydro will go beyond a Level 1 study and conduct a controlled flow whitewater boating assessment. The boating groups assert that the information that a Level 1 study would generate is "already known" and, therefore, a controlled flow whitewater boating assessment is necessary to evaluate the whitewater boating opportunities in both the bypassed reach and the lower Mongaup reach.

Additionally, the boating groups are concerned that the proposed in-person structured interviews will not capture users that have firsthand knowledge of the bypassed reach because the bypassed reach is only boatable during rare, extreme precipitation events.

The boating groups also request that Eagle Creek Hydro deploy the proposed survey instrument online and that the survey instrument include questions related to the minimum acceptable or optimal boating flows, the adequacy of the current release schedules, and the adequacy of current flow information.

Discussion and Staff Recommendation

The current license for the Rio Project requires a 100-cfs minimum flow in the bypassed reach and one biweekly whitewater boating release from the powerhouse into the lower Mongaup reach from April 15 and October 15, with releases alternating between Saturdays and Sundays. The biweekly releases also alternate between 435 cfs (1 unit) or 870 cfs (2 unit) flows. In appendix D of the RSP, Eagle Creek Hydro provides the results of a whitewater boating study that was conducted in 1990 downstream of the Rio powerhouse as part of the previous licensing effort at the project. There are no known studies of the bypassed reach, and, therefore, there is limited available information on the potential for whitewater boating opportunities in the bypassed reach [section 5.9(b)(4)].

Eagle Creek Hydro's proposed study generally conforms to the commonly accepted practices outlined in Whittaker, Shelby, and Gangemi (2005). Since there is

little to no information on whitewater boating opportunities in the bypassed reach, this approach is acceptable. Further, if the structured interviews do not provide a reasonably large sample of boaters who have knowledge of the bypassed reach, then Eagle Creek Hydro should recruit knowledgeable interviewees some other way in order to obtain the necessary information (e.g. working with stakeholder groups, convening a focus group, etc.).

Prior to submitting the ISR to the Commission, Eagle Creek Hydro should provide the results of their Level 1 analysis to the boating groups, agencies, and other stakeholders for comments, and allow at least 30 days for their responses. Eagle Creek Hydro should include these comments, and their responses to them, in the ISR. Upon receipt of the ISR, if there is a disagreement among the relicensing participants, the question of whether Eagle Creek Hydro should conduct a Level 2 and/or Level 3 study for either or both reaches would be resolved through the study plan modification process.

Additionally, Eagle Creek Hydro should revise the survey instrument to include questions to elicit information on minimum acceptable or optimal boating flows, the adequacy of the current release schedules, and the adequacy of current flow information. As for the method of distribution of any survey instrument(s); an online survey distributed to a convenience sample would not provide a representative sample of project users [section 5.9(b)(6)]. Therefore, we do not recommend that Eagle Creek Hydro be required to distribute the survey online.

Study 9 – Shoreline Management Assessment Study

Eagle Creek Hydro's Proposal

Commission staff has fielded numerous complaints (both before and during the scoping meeting) regarding aspects of shoreline management, such as regulations concerning docks and water levels; and conflicts between property owners. Currently, Eagle Creek Hydro uses "shoreline management guidelines" that are generally less detailed than a full shoreline management plan. In order to inform the potential development of a shoreline management plan, Eagle Creek Hydro proposes to conduct a survey of abutting shoreline property owners, and of other private property owners who have reservoir rights (i.e. rights to access the project reservoirs through their ownership of adjacent property), to solicit information on their use of the reservoirs, perceptions of potential crowding and/or conflict, current shoreline management practices, and the impacts of reservoir water levels. The survey will target the population of shoreline and adjacent property owners on Toronto Reservoir and Swinging Bridge Reservoir, which

are both part of the Swinging Bridge Project. Eagle Creek Hydro will consult with representatives of the various property owners to determine the best method to deliver the survey, which they state will likely be via direct mail.

Comments on the Study

HOOT comments that it generally supports the proposed study, but offers a few specific suggestions to improve the survey instrument. First, HOOT suggests that the relevant questions clearly describe the specific elements of Eagle Creek Hydro's shoreline management practices and responsibilities, because some respondents might not be aware of the full scope of Eagle Creek Hydro's current shoreline management activities. Second, HOOT suggests additional questions related to property owners' perceptions of the effects of reservoir levels on project aesthetics, dock length and location, their decision to acquire a boat, and their decision to remove a boat.

Discussion and Staff Recommendation

Eagle Creek Hydro should modify the survey instrument to include clear descriptions of the specific elements of Eagle Creek Hydro's shoreline management practices and responsibilities; and include the additional questions related to property owners' perceptions of the effects of reservoir levels on project aesthetics, dock length and location, their decision to acquire a boat, and their decisions to remove a boat. Besides the Commission's records of complaints and various statements given in the scoping meeting related to shoreline management, there is little to no other information on this issue shoreline management at the Swinging Bridge Project [section 5.9(b)(4)]. The information from this study is necessary for Commission staff's analysis of any proposed measures related to shoreline management, including the shoreline management plan that Eagle Creek Hydro intends to develop [section 5.9(b)(5)]. Additionally, the requested modifications would not be expected to add significant cost to the study [section 5.9(b)(7)].

Study 10 – Cultural Resources Study

Eagle Creek Hydro's Proposal

Eagle Creek Hydro proposes to conduct a comprehensive cultural resources survey and inventory within the projects' area of potential effects (APE), which include all lands within the FERC project boundaries, and any additional lands outside the FERC project boundaries where project-related effects could affect historic properties. This would

consist of a systematic pedestrian survey within all accessible areas of the APE using a crew of qualified professional archaeologists. All archaeological sites would be recorded, mapped, and photographed in compliance with standards established by the New York State Historic Preservation Office (SHPO). Such methods would reflect a Phase IA archaeological survey, and if needed, a Phase IB archaeological survey. Eagle Creek Hydro also proposes to conduct a survey of architectural and engineering resources 50 years or older within the projects' APE, including project-related facilities and non-project-related facilities. This work would be conducted according to New York SHPO standards for historic resources surveys, including appropriate site maps, completion of survey files, photography, and data entry into the online cultural resource information system (CRIS). Following background research and field work, each surveyed architectural resource would be evaluated for its eligibility for inclusion to the National Register of Historic Places (National Register).

Eagle Creek Hydro proposes to include a determination of project-related effects on any resources recommended eligible for inclusion to the National Register. Eagle Creek Hydro also proposes to contact the Delaware Nation and Delaware Tribe to obtain information of any place of religious or cultural significance (i.e., traditional cultural properties, past villages or sites, gathering areas) and provide them a draft cultural resources study report for review. If such cultural resources exist within the APEs, Eagle Creek Hydro would assess their National Register eligibility and potential or existing project-related effects. This element of the study would be conducted by a knowledgeable professional with anthropological training in talking with, and gaining information from, Indian tribes. If historic properties (i.e., any cultural resources determined eligible for the National Register) are located within the projects' APEs, or other historic properties are affected by the projects outside the APEs, Eagle Creek Hydro would prepare a historic properties management plans (HPMP), which would govern the management of historic properties during the term of any new licenses issued for the projects.

Comments on the Study

No comments filed.

Discussion and Staff Recommendation

Eagle Creek Hydro is proposing to decommission the Black Brook development. The Black Brook Dam and appurtenant facilities are more than 50 years old; and therefore, Eagle Creek Hydro should also determine whether the dam and appurtenant facilities are eligible for the National Register and seek concurrence from the New York

SHPO. If it is determined that the Black Brook Dam is eligible, and the New York SHPO concurs, Eagle Creek Hydro, in consultation with the New York SHPO, should conduct a complete written and photo documentation of the affected facilities and use such documentation for the resolution of any potential adverse effects to Black Brook Dam and appurtenant facilities. This work should be included in the cultural resources study report, and draft and final HPMPs, including the determination of National Register eligibility of any archaeological resources discovered in these affected areas during the term of any license issued, and subsequent steps to resolve any potential adverse effects to such archeological resources determined to be eligible. An APE also needs to be established for this site, and Eagle Creek Hydro should seek concurrence on the APE from the New York SHPO.

Study 11 – Black Brook Dam Decommissioning Study

Eagle Creek Hydro's Proposal

To support a decommissioning analysis of Black Brook Dam, Eagle Creek Hydro proposes to: (1) verify the depth and dimensions of the dam; (2) characterize the sediments (volume and chemical composition) within the impoundment; and (3) provide a description of the existing environment in the immediate vicinity of the dam.

Comments on the Study

The FWS and NYSDEC request that Eagle Creek Hydro study the fish and macroinvertebrates within Black Brook to aid in the evaluation of decommissioning the Black Brook Dam. The agencies also request that Eagle Creek Hydro provide an opportunity for agency staff to visit the Black Brook dam and impoundment and conduct a site-visit.

Discussion and Staff Recommendation

Macroinvertebrate Surveys

We discuss the agencies request for fishery and macroinvertebrate surveys in Black Brook above under *Study 3 – Fisheries Survey Study* and *Study 6 – Macroinvertebrate and Mussel Survey*, respectively.

Site-visit

Regarding the agencies' request for a site-visit, we do not expect agency access to the projects to be an issue considering Standard Article 4 of the project licenses affords officers or employees of the United States, showing proper credentials, free and unrestricted access to, through, and across project lands and project works in the performance of their official duties.

Dam Borings

To verify the depth and size of the Black Brook Dam, Eagle Creek Hydro proposes to conduct two borings into the dam. We recommend Eagle Creek Hydro consult with and obtain approval from the Commission's Division of Dam Safety, New York Regional Office, prior to implementing any tests that may affect the structure's integrity.

Study 12 – Special-Status Species Survey Study

Eagle Creek Hydro's Proposal

In order to document the presence or absence of special-status plant and wildlife species and their habitat potentially occurring at the projects, Eagle Creek Hydro proposes a phased approach. Eagle Creek Hydro initially would conduct a desktop study starting with consultation with FWS and NYSDEC to confirm which special-status species potentially occur in the projects' area. Eagle Creek Hydro proposes to map existing records and compile habitat requirements and life histories for all special-status species potentially occurring within the projects' boundaries. Based on those species previously documented or potentially existing within the projects' boundaries, Eagle Creek Hydro would perform field surveys within the projects' boundaries.

Concurrent with the field effort for this study, Eagle Creek Hydro would perform a site reconnaissance to evaluate and document aquatic and terrestrial environments 100 yards upstream and downstream of the Black Brook Dam for *Study 11 - Black Brook Dam Decommissioning*.

Comments on the Study

FWS and NYSDEC recommend that the study be modified to include recording any additional raptor species noted as roosting, foraging, or nesting at the projects.

Discussion and Staff Recommendation

NYSDEC has indicated that peregrine falcons, state-listed as endangered, have been documented nesting in the vicinity of the projects. During the nesting season, peregrine falcons and other raptor species are particularly prone to disturbance which could affect their reproductive success. Project operations and maintenance (O&M) and recreation activities have the potential to disturb nesting raptors [section 5.9(b)(5)]. Documenting the location and status of any raptor nest encountered during surveys for special-status species and bald eagle nest surveys (Study 13), as recommended by FWS and NYSDEC, would inform staff's environmental analysis [section 5.9(b)(4) and (5)]. Such incidental observations, would be of minimal additional effort and cost [section 5.9(b)(7)]. However, it's unclear how staff would use observations of raptors roosting and foraging in the vicinity of the projects, as recommended by FWS and NYSDEC, to further inform our environmental analysis of project effects or develop recommendations for measures to be included in any license issued for the project [section 5.9(b)(5)]; therefore we do not recommend its adoption.

Study 13 – Bald Eagle Management Study

Eagle Creek Hydro's Proposal

Bald eagles are known to nest in the Mongaup River Valley. In addition, the previous relicensing process established that fish entrained at the projects are a food source for scavenging wildlife, including a large number of bald eagles that winter at the projects[1]. Bald eagles also habitually return to regular night roosts that are commonly occupied by multiple individuals.

Eagle Creek Hydro proposes a desktop study to compile existing information regarding bald eagle nesting and winter foraging activities in the project areas. Specifically, Eagle Creek Hydro proposes to: (1) consult with the FWS, Park Service, NYSDEC, and the Delaware Highlands Conservancy (DHC) to obtain existing information on eagles in the Mongaup River System; (2) request breeding summary reports and GIS nest location data from NYSDEC; (3) conduct interviews with individuals who have historically performed surveys and management activities for bald

[1] See staff's Environmental Assessment issued for the three projects on September 19, 1991, and Eagle Creek Hydro's PAD filed on March 30, 2017.

eagles within the project areas (e.g. former NYSDEC staff); and (4) provide Eagle Creek Hydro O&M staff with log sheets to record observations of bald eagle activity including foraging, roosting, and nesting behavior during the study period.

Eagle Creek Hydro would develop a report summarizing recovery efforts and study results in the Mongaup River System including annual winter population counts, foraging activities (i.e., preferred prey and foraging sites), breeding and nesting activities in the project area, roosting locations, and summarize collected results from interviews and existing data. Based on the results of this study, Eagle Creek Hydro proposes to develop a bald eagle management plan that would be filed with the Commission concurrent with the FLA.

In support of the nesting component of its proposal, Eagle Creek Hydro requests that NYSDEC and DHC provide existing information regarding eagle observations, management activities, and nest locations. Eagle Creek Hydro contends that the existing NYSDEC data should provide sufficient information on nesting bald eagles in the vicinity of the projects.

Comments on the Study

In general, FWS and NYSDEC assert that the licensee has not proposed a study that will meet the goals and objectives of their recommended *Bald Eagle Population and Winter Foraging Study*. NYSDEC state that the existing data the licensee proposes to use is outdated, limited in scope, or tangential regarding bald eagle resource use in the project area.

Nest-site Surveys

FWS state that the existing bald eagle nesting data has not been updated since 2010. In addition, NYSDEC states that existing nest data only consist of general coordinates of reported nest locations based on their last date of observation.

Objective 1 of the *Bald Eagle Population and Winter Foraging Study*, as requested by FWS and NYSDEC, would include: (1) collecting all available data from the NYSDEC and DHC regarding active and inactive bald eagle nest locations in the vicinity of the projects, (2) conducting visual surveys during the nesting season (December 1 through June 30) to identify the location and status (present/absent, active/inactive) of all eagle nests in the vicinity of the projects and recording any observations of eagles and their young, (4) following protocols found in FWS's Bald

Eagle Management Guidelines and Conservation Measures, and (5) preparing a map and summary of nest locations in the vicinity of the projects symbolized by status.

Winter Roost Surveys

NYSDEC also states that there is no existing information on winter overnight roost sites and requests that Eagle Creek Hydro identify these sites as part of its study plan.

Bald Eagle Spatial Activity, Diet Composition, and Fish Entrainment

FWS and NYSDEC state anecdotal evidence suggests that open water in the winter months and the entrained alewife forage base are the primary reasons for the notable winter bald eagle population at the projects. The agencies note that no standardized studies have been conducted to support this hypothesized relationship or examined the degree to which wintering eagles feed on entrained fish and alewife, in particular. As discussed above in *Study 4 - Fish Entrainment/Impingement*, the agencies raised several concerns regarding the entrainment studies during the last relicensing (LMS 1994) that were conducted in part to evaluate the availability of entrained alewife for winter feeding of bald eagles. Despite design issues, the agencies acknowledge that this study (LMS 1994) showed that alewife was the most abundant species entrained in the winter months and that they were typically less than 10 centimeters (cm) in length.

FWS notes they will be evaluating potential impacts to the bald eagle population at the projects to inform the need for fish protection and passage measures that may be prescribed under their Section 18 authority of the Federal Power Act. FWS states the needed information in their requested *Fish Protection and Downstream Passage Study*, in combination with the agencies' recommended eagle study, would allow them to determine what effects potential future fish passage and protection measures at the projects would have on fish entrainment and the wintering bald eagle population.

Regarding wintering eagles the *Bald Eagle Population and Winter Foraging Study* recommended by FWS and NYSDEC would include the following: (objective 2) spot map locations and document behavior (especially foraging) of all bald eagles found in the project impoundments, tailraces, and downstream areas to generate an interpolated map of bald eagle foraging activity; (objective 3) focused surveys to identify forage species (e.g., fish, mammal, bird) and size, and if it's found that eagles generally forage downstream of the powerhouses, conduct additional focused foraging observations in areas noted having the highest concentration of eagle activity with relevant project generation being noted for each location; (objective 4) analysis of the relationship of the

observed winter forage activity of eagles at the projects and fish entrainment due to project operations; and (objective 5) if determined necessary by the agencies, conduct a study to document the type, number, and size of fish entrained during the winter.

Discussion and Staff Recommendation

Nest-site Surveys and Winter Roost Surveys

Disturbance resulting from human presence, noise, and equipment associated with ongoing maintenance (e.g. vegetation management, repairs) and recreation activities could adversely affect nesting bald eagles and wintering bald eagles using regular overnight roost sites (section 5.9(b)(5)). Therefore, knowing where eagle nest sites and roost sites are located will assist our analysis of ongoing project effects, if any, on the eagles and allow us to determine what measures could be implement to enhance eagle roosting habitat (section 5.9(b)(5)). The existing NYSDEC data would not provide sufficient current, or project-specific information, on the location of active and inactive (i.e. alternative) bald eagle nest sites [section 5.9(b)(4), (6), and (7)]. There is also no current information on overnight roost sites regularly occupied by bald eagle wintering at the projects [section 5.9(b)(4)]. Such information will inform our environmental analysis and aid in developing recommendations for measures to be included in any license issued for the project [section 5.9(b)(5)].

Objective 1 of the *Bald Eagle Population and Winter Foraging Study*, as recommended by FWS and NYSDEC, would provide the level of information required by staff regarding bald eagle nesting; therefore, we it recommend as part of the approved study plan. We also recommend surveys to document and map overnight roost sites regularly occupied by bald eagles wintering at the projects as part of Eagle Creek Hydro's study plan.

Bald Eagle Spatial Activity, Diet Composition, and Fish Entrainment

We recognize that no standardized studies have been conducted to support the hypothesized relationship between the diet of wintering bald eagles and entrained fish or the spatial activity of foraging eagles at the projects. However, we also note that existing data has generally establish that the open water in the winter months and fish entrained at the projects are used by the wintering bald eagle population.

Although entrained fish constitute some unknown portion of the wintering bald eagle diet, the eagles are likely not strictly dependent on this food resource alone. Additionally, no information has been provided to suggest that alternative food sources

are unavailable or limited due to project-related effects. Therefore, given the artificial means by which entrained fish are made available, incidental to project operations, staff consider this food resource supplemental to the natural diet of the wintering bald eagle population. As such, it's reasonable to expect that eagles would be able to make adjustments to their foraging behavior to locate alternative food sources if the quantity of entrained fish should change as a result of project operations. Due to this, any effects to bald eagles resulting from a decrease in fish entrainment at the projects would not be expected to be long term and would be offset by the benefits to the fish populations.

Staff note that studies to assess the relative importance of a supplemental food source (entrained fish) for bald eagles wintering in the project area to inform agency recommendations or management strategies (maintain or enhance entrainment of fish) is not the licensee's responsibility.

Otherwise, we find that objectives 2 through 4 are unlikely to provide conclusive data regarding the diet composition of wintering bald eagles. Further, it's unclear how the additional information and level of detail that would be provided by objectives 2 through 5 would be used to further inform our environmental analysis of project effects or develop recommendations for measures to be included in any license issued for the project [section 5.9(b)(5)], particularly given the level of effort and cost that would be required [section 5.9(b)(7)].

Lastly, as discussed above in *Study 4 - Fish Entrainment/Impingement Study*, staff find that the LMS study entrainment data collected between November 1992 and March 1993 to be reliable and sound [section 5.9(b)(4) and (6)].

Based on the reasons discussed above, we do not recommend objectives 2 through 5 of the *Bald Eagle Population and Winter Foraging Study* recommended by FWS and NYSDEC.

Study 14 – Bypass/Base Flow Transect Evaluation Study

Licensees' Proposal

In its *Bypass/Base Flow Transect Evaluation Study* Eagle Creek Hydro proposes to evaluate the relevance of the 1988 *Mongaup Basin Instream Flow Study* (Stetson-Harza and Icthyological Assoc. 1988) to determine whether it still accurately represents the existing baseline conditions and can be used to analyze current flow study needs at the projects. To accomplish this, of the 74 original transects evaluated, the Eagle Creek Hydro proposes to resurvey one transect in the following five stream reaches:

- Black Lake Creek downstream of Toronto Dam – Transect 4
- Mongaup River downstream of Swinging Bridge – Transect 66
- Mongaup Falls bypassed reach – Transect 8
- Rio bypassed reach – Transect 8 of Reach 1
- Mongaup River downstream of Rio powerhouse – Transect 6 of Reach 3

For these five transects, Eagle Creek Hydro proposes to collect water velocity, depth, and substrate composition at 1-foot intervals.

In addition, because the 1988 study did not include Black Lake Creek downstream of Cliff Lake, Eagle Creek Hydro proposes to augment the 1988 study with up to three transects, one for each mesohabitat present (i.e., pool, riffle, run).

Comments on the Study

Adequacy of 1988 Mongaup Basin Instream Flow Study

The boating groups assert that a new Instream Flow Incremental Methodology (IFIM) study is needed to assess habitats in the bypassed reaches and downstream of project tailraces given the significant flood events over the last 30 years (e.g., Hurricane Irene in 2011). The FWS and NYSDEC request that Eagle Creek Hydro conduct a new Delphi or IFIM study.

Representative Sample and Sample Size

If the applicant's proposed study is approved in lieu of their preferred new Delphi or IFIM study, the FWS and NYSDEC recommend that the applicant's proposed transect resampling result in an overall error of less than five percent (95 percent confidence) compared to the existing 1988 *Mongaup Basin Instream Flow Study*. The agencies

further recommend that transects selected to be resampled represent the extent and variability within the selected study reaches.

Study Review

The FWS and NYSDEC recommend that Eagle Creek Hydro include a "placeholder" in the *Bypass/Base Flow Transect Evaluation Study* to allow the agencies to review the 1988 study in context with current licensing studies and following the first year of study.

Flow Observations

The FWS and the NYSDEC request that Eagle Creek Hydro provide them an opportunity to observe the existing minimum flow across all of the affected reaches, and an opportunity to observe any final proposed flow modifications.

Discussion and Staff Recommendation

Adequacy of 1988 Mongaup Basin Instream Flow Study

The 1988 *Mongaup Basin Instream Flow Study* provides the information needed to evaluate potential project effects on flow and aquatic resources in project effected stream reaches [section 5.9(b)(4)]. However, changes to minimum flow regimes from the projects' previous license to their current license and significant stream flow events (e.g., Hurricane Irene) may have changed project affected stream channels evaluated in the 1988 study [section 5.9(b)(4)]. Evaluating the relevance of the 1988 study transect data to determine whether they accurately represent the existing baseline conditions is a cost effective reasoned approach [sections 5.9(b)(6) and (7)] to addressing flow study needs at the projects.

Representative Sample and Sample Size

It is critical that the selected transects provide an adequate sample size and represent the available habitats within each sampled reach in order to determine whether the existing transect data can be relied upon and used to evaluate existing, proposed, and recommended streamflows. However, Eagle Creek Hydro's proposed sample of five transects represents less than 7 percent of the transects used in the 1988 study. In addition, its methods for selecting the five transects and how they represent the habitat within their sampled reach is unclear [sections 5.9(b)(6) and (4)].

As a result, we recommend that Eagle Creek Hydro randomly select one 1988 study transect from each mesohabitat (i.e., pool, riffle, run) present within each of the five stream reaches proposed for resurveying. Resurveying each mesohabitat type present within each of these five reaches would ensure an adequate sample size (up to 15 transects, 20 percent of transects surveyed in 1988 study) and that the transects are representative of the available habitat [section 5.9(b)(6)]. We also recommend that Eagle Creek Hydro's initial study report include a description of each reach and the available mesohabitats found within them, the process used to randomly select mesohabitat-specific transects, and a statistical analysis of the resurveyed transect data comparing it to the original 1988 study's transect data.

We anticipate this recommended modification will increase the cost of this study by about $50,000; however, this level of effort is needed to evaluate the reliability and usefulness of the existing transect data from the 1988 *Mongaup Basin Instream Flow Study*.

Study Review

The Integrated Licensing Process includes provisions for an initial study report [section 5.15(c)(1)], a public meeting to discuss study results [section 5.15(c)(2)], and an opportunity to file comments on the initial study report and request study plan modifications and/or new studies [section 5.15(b)(4)]. As a result, the agencies request that the study plan include a "placeholder" to allow the agencies an opportunity to review the 1988 study in context with current licensing studies would be duplicative of our regulations and, therefore, unnecessary.

Flow Observation

In regards to the agencies' request to observe existing minimum flows in affected reaches, as we note above, we do not expect agency access to the projects to be an issue considering Standard Article 4 of the project licenses affords officers or employees of the United States, showing proper credentials, free and unrestricted access to, through, and across project lands and project works in the performance of their official duties.

If a resource agency chooses to be present during the implementation of licensing studies it is our expectation that the licensee will accommodate such a request.

Regarding the agencies' request for an opportunity to observe any final proposed flow modifications, we note that Eagle Creek Hydro is not currently proposing any change to the existing minimum flow requirements. Any proposed alteration to

minimum flows would be presented in Eagle Creek Hydro's Preliminary Licensing Proposal (PLP), which would be filed pursuant to section 5.16 of the Commission's regulations, following the implementation and completion of the approved study plan. As a result, it is premature to require Eagle Creek Hydro to provide an opportunity to observe the final proposed streamflows as a provision in the approved study plan. Therefore, we do not recommend that the study plan be modified to include such a provision.

SECTION 3: STUDIES REQUESTED BUT NOT ADOPTED BY EAGLE CREEK HYDRO

Delaware River Flow and Aquatic Habitat Study

Issue

Water releases from the Rio Project into the Mongaup River flow directly into the Delaware River. According to the Park Service, these releases count towards the USGS Montague Gage flow target (Montague target) of 1,750 cfs, located 16 miles downstream of the mouth of the Mongaup River.[2] The USGS River Master (River Master) considers Eagle Creek Hydro's forecasted flow releases from the Rio Project, along with base flow and other inputs, when determining water releases from New York City (NYC) reservoirs on the East and West Branches of the Delaware needed to meet, but not exceed, the Montague target. As a result, the Park Service argues that water releases from the Rio Project directly influence the River Master's releases from the NYC reservoirs, and subsequently, influence the stream flow in the East and West Branches of the Delaware River below the reservoirs and in the mainstem of the Delaware River for 69 miles downstream to the confluence with the Mongaup River.

Park Service also argues that the Delaware River downstream of the Mongaup River confluence is potentially impacted by lower than normal water conditions when planned releases from the Rio Project, which are factored into the River Master's flow release calculations from the NYC reservoirs, are later cancelled or reduced. The Park Service states that when planned releases from the Rio Project are cancelled or reduced, the River Master is unable to augment the flow to meet the Montague target due to the 3-day travel time for flow releases from the NYC reservoirs to reach the mouth of the Mongaup River. Park Service notes that this results in a flow deficit at the Montague gage and lower flows in the Delaware River for 77.44 miles downstream of the Mongaup River to the Easton, PA, the upstream-most point where directed releases from the Lehigh River can be used to make up for deficient Delaware River flows. Subsequently, the Park Service argues that the Rio Project has the potential to affect the Upper, Middle, and Lower Delaware Scenic and Recreational River, from the NYC reservoirs to Easton, PA.

[2]Rio water releases to the Mongaup River flow directly into the Delaware River, and occur within a system with strict rules governing flow management established by the Amended 1954 Supreme Court Decree, which states that a minimum basic rate of flow of 1750 cfs shall be maintained at USGS Montague Gage (https://water.usgs.gov/osw/odrm/decree.html).

Study Request

The Park Service, FWS, and NYSDEC request that Eagle Creek Hydro evaluates the Rio Project's operational effects on Delaware River flows, upstream and downstream of the confluence with the Mongaup River. Specifically, to document the potential influence of the cancellation of planned flow releases from the Rio Project that were factored into the River Master's calculation for compensating releases from the NYC reservoirs, the Park Service requests that Eagle Creek Hydro provide data on flows (cfs) and river height (stage) during the timeframe of influence of Mongaup system releases at USGS gages located along the east and west branches of the Delaware River, as well as the mainstem to Easton, PA, which is located downstream of its confluence with the Mongaup River.

In addition, the Park Service requests that the licensee provide a record of all the times when planned releases from the Rio Project that were provided to the River Master were canceled, or significantly reduced, and for what reason. Park Service requests that this also include an analysis of the degree to which the flows in the bypassed reach below the Rio Project have been in compliance with the minimum flow requirements in the current license (100 cfs or 60 cfs minimum release). Park Service specifies that this analysis would involve a desktop analysis of the past 5-10 years of instantaneous gage data from the USGS gages below the Rio Project.

As a component of its requested *Flow Study*, the Park Service also requested that Eagle Creek Hydro evaluate the effects of the Mongaup River Projects' operations on water temperature and aquatic habitat within the Delaware River upstream and downstream of its confluence with the Mongaup River. We note that the FWS and NYSDEC in their comment on the RSP, also requested the study of temperature conditions in Delaware River upstream and downstream of the Mongaup River confluence. Park Service requests that Eagle Creek Hydro map the mesohabitat (e.g., pool, riffle, run) of the Delaware River between New York and Easton, Pennsylvania. The requested aquatic habitat mapping would document stream depth, water velocities, and substrates. Park Service requests that the habitat mapping extend into the Mongaup River and its tributaries where Eagle Creek Hydro's proposed fishery surveys would be conducted.

Additionally, the Park Service requests that this study address the Rio Project's effects on recreation on the Delaware River upstream and downstream of the confluence with the Mongaup River. The Park Service asserts that cancellation of scheduled project releases could impact flow-dependent recreation opportunities, citing a brief hypothetical

situation where canoeists must "drag" their boats in times of resulting miscalculations of flow releases by the River Master from the NYC reservoirs. The Park Service requests that the study include data on project effects on recreation use and user experiences on the Delaware during the Rio Project's recreational flow releases, but it does not describe what type(s) of data, beyond readily available gage information, that should be included. The Park Service does note that this study would be a desktop exercise, which seems to indicate that the Park Services does not believe any field data collection efforts would be required.

Discussion and Staff Recommendation

Delaware River Flows

While the River Master may use information provided by Eagle Creek Hydro in its flow management of the Delaware River and established by the Amended 1954 Supreme Court Decree (Decree), the Decree does not specify any legal obligation on Eagle Creek Hydro to provide flows to satisfy the target flows articulated in the Decree. As a result, there is no nexus between project operations and flows on the Delaware upstream of the Mongaup River confluence [section 5.9(b)(5)]. Project operations do, however, have the potential to affect reservoir elevations for each of the projects' five reservoirs, flows in the Mongaup River below each of the projects, and the Delaware River downstream of its confluence with the Mongaup River [section 5.9(b)(5)]. Therefore, we recommend that Eagle Creek Hydro evaluate the effect of flow releases from the Rio Project on the Delaware River downstream of its confluence with the Mongaup River. According to the section 5.7 of the RSP, Eagle Creek Hydro proposes to develop, calibrate, and validate an operations model that: (1) integrates each of the three Mongaup River Projects; (2) supports the future evaluation of proposed and potential recommendations for project operations at an hourly time-step and under various reservoir inflow and outflow conditions; and (3) upon completion, is capable of predicting reservoir elevations, surface areas, available storage, and generation that would result from various operational scenarios. The model will be utilized to support future evaluations of impoundment elevations and downstream flows based on proposed operating, flow, and recreation alternatives for the three projects [section 5.9(b)(6)].

Eagle Creek Hydro has proposed to graph the flows over the past 4 years associated with the USGS gage located immediately downstream of the Rio powerhouse, as well as the USGS gage located immediately downstream of the confluence of the Mongaup River and the Delaware River. However, since there is no other major tributary to the Delaware River downstream of the Mongaup River, we recommend that Eagle Creek Hydro extend the flow study downstream of the Rio project to the USGS gage on

Delaware River at Easton, PA. We also recommend that Eagle Creek Hydro extend the time period as necessary so that it includes a minimum of one dry year, one wet year, and a normal year [sections 5.9(b)(5) and 5.9(b)(6)].

Eagle Creek proposes to also provide information regarding forecasted and actual recreation and generation flows and present this information in a report with the data from two USGS gages located immediately downstream of the Rio powerhouse (USGS gage No. 01433500 - Mongaup River near Mongaup, NY) and immediately downstream of the confluence of the Mongaup River and Delaware River at Port Jervis, NY (USGS gage No. 01434000 – Delaware River at Port Jervis, NY). This data will allow the stakeholders to correlate the forecasted and actual flows from the projects relative to the flows downstream of the confluence of the Mongaup and Delaware Rivers. Existing historical flow data for USGS gages is readily available online, and an analysis that compares the influence of Mongaup River Project releases on resulting Delaware River flows downstream of the Mongaup River is a desktop exercise for the licensee that can be performed with little difficulty and at relatively minimal cost [Sections 5.9(b)(4) and 5.9(b)(7)].

Delaware River Water Temperature

As discussed in section 9.5 of the RSP, the Rio Reservoir thermally stratifies during the summer and the Rio Project's intakes are located within the thermocline [Section 5.9(b)(4)]. Drawing water from the reservoir's thermocline likely results in substantially cooler water temperatures in the Mongaup River downstream of the Rio powerhouse. As discussed above, the Rio Project's peaking operations would likely influence Delaware River flows. Similarly, cold-water input from the Mongaup River would affect water temperature in the Delaware River downstream of the Mongaup River confluence, rising and falling with the cyclical operation of the Rio powerhouse [section 5.9(b)(5)].

In section 5.10 of the RSP, Eagle Creek Hydro notes that it is not aware of any continuous water temperature data available for the Delaware River downstream of the Mongaup River confluence [section 5.9(b)(4)] and that this data would be needed to evaluate potential project impacts to the water temperature of the Delaware River [section 5.9(b)(6)]. However, given the 200-square-mile watershed of the Mongaup River versus the 3,070-square-mile watershed of the Delaware River, Eagle Creek Hydro finds that performing the requested monitoring "would equate to searching for a problem." However, a review of mean daily flows in the Mongaup River and the Delaware River between May 1 and September 30 for 2016 and 2017 (USGS gage Nos. 01433500 and 01434000) indicates that, on average, Mongaup River flows are equivalent to 7 percent of

the Delaware River flow as measured upstream of the confluence. On July 7, 2016 and July 20, 2017, Mongaup River flows were 19 and 16 percent of the mean daily flow in the Delaware River upstream of the confluence, respectively. Although these percentages may not seem significant, the Rio Project operates in a peaking mode. Therefore, real-time instantaneous flows from the Rio Project's peaking flow releases/cessations would have a greater influence on the Delaware River than demonstrated in a mean daily flow analysis. As a result, we find that operation of the Rio Project operation and subsequent flow releases and cessations likely affect water temperature on a sub-daily basis in the Delaware River [section 5.9(b)(5)].

Water temperatures affect the composition of communities within aquatic habitats. Water temperatures also influence biological activity and growth in fish and other aquatic biota. Fish, macroinvertebrates, and other aquatic species generally have a preferred temperature range.[3] As a result, we recommend that Eagle Creek Hydro modify its *Water Quality Study* to monitor water temperature in the Delaware River at one location upstream of Mongaup River confluence and at up to three locations downstream of the confluence. Eagle Creek Hydro should use the resulting data to articulate temperature effects of the Rio Project operations on Delaware River water temperatures and to delineate the zone of thermal mixing within the Delaware River. Specific locations should be determined in consultation with the Park Service, FWS, and New York DEC.

Aquatic Habitat Mapping

As discussed above, we recommend that Eagle Creek Hydro evaluate the effect of flow releases from the Rio Project on the Delaware River downstream of its confluence with the Mongaup River. Understanding, the project's effects on the stage change in this section of the Delaware River is the first step in establishing a clear nexus of potential project effects on aquatic habitats there [section 5.9(b)(5)] . Therefore, it would be premature to require Eagle Creek Hydro to conduct the requested aquatic habitat mapping on the Delaware River downstream of the confluence with the Mongaup River. For reasons discussed above, under *Delaware River Flows,* we do not find it appropriate to require Eagle Creek Hydro conduct aquatic habitat mapping on the Delaware River upstream of its confluence with the Mongaup River.

Finally, regarding the Park Service's request for aquatic habitat mapping of the Mongaup River and tributaries, we note that the *Mongaup Basin Instream Flow Study*

[3] Source: https://water.usgs.gov/edu/temperature.html; retrieved January 26, 2018.

(1988), characterized substrate and water velocities at 74 transects within eight project effected stream reaches documenting the available aquatic habitat, with the exception of Black Lake Creek downstream of Cliff Lake [section 5.9(b)(4)]. As discussed above in Section 2 - *Proposed Studies*, Eagle Creek Hydro proposes a *Bypass/Base Flow Transect Evaluation Study*, to evaluate the continued relevance of the *Mongaup Basin Instream Flow Study* and to augment its data with habitat data (water velocity, depth, and substrate composition) from mesohabitats within Black Lake Creek [section 5.9(b)(6)]. As a result, requiring the Park Service's requested aquatic habitat mapping in the Mongaup River and affected tributaries would be premature, pending the completion of the *Bypass/Base Flow Transect Evaluation Study*, as modified by staff and discussed in Section 2 above.

Project Effects on Delaware River Recreation

As discussed above, we recommend that Eagle Creek Hydro evaluate the effect of flow releases from the Rio Project on the Delaware River downstream of its confluence with the Mongaup River. Understanding the project's effects on stage change in this section of the Delaware River will help in understanding the relationship between project operation and flow-dependent recreation there (i.e. effects on recreation use and user experience) [section 5.9(b)(5)] . Therefore, it would be premature to require Eagle Creek Hydro to conduct the requested analysis of potential effects on flow-dependent recreation on the Delaware River downstream of the confluence with the Mongaup River. Regarding upstream of the confluence, as discussed under *Delaware River Flows*, there is no nexus between the projects and Delaware River flows upstream of the confluence with the Mongaup River; therefore, we do not recommend that Eagle Creek Hydro conduct any analysis of potential effects on flow-dependent recreation there.

Upstream and Downstream Fish Passage Study

Issue

The Projects have the potential to block or impede the upstream and downstream passage of migratory fish species, particularly American shad and American eel. Spawning American shad are known to be present in the Delaware River upstream of the confluence of the Mongaup River, so presence in the Mongaup River may be possible as well. American eel have been documented in the both the Delaware Rivers and as far upstream in the Mongaup River Basin as the Mongaup Falls Reservoir.

Study Request

The FWS and NYSDEC request that Eagle Creek Hydro conduct an upstream and downstream fish passage feasibility study. Specifically, the agencies' request that Eagle Creek Hydro collect site-specific information from the projects and conduct a preliminary analysis that will aid in the design of protection and passage facilities at the projects, including the storage reservoirs (Toronto and Cliff Lake) and the Black Brook development. The agencies request that the analysis include an assessment of alternatives that would effectively pass fish upstream and downstream around the projects' works and emphasize that special attention be given the passage of American eel.

Discussion and Staff Recommendation

Eagle Creek Hydro does not propose to conduct a fish passage feasibility analysis at this time. Eagle Creek Hydro considers the analysis premature given the proposed *Study 3 – Fisheries Survey Study*, which is intended to provide information on the Mongaup River fishery affected by the projects. When a project's effect on the resource of interest is confirmed, conducting a feasibility analysis such as the requested study may be appropriate as it would inform potential license conditions intended to address specific project effects [sections 5.9(b)(5) and (6)]. However, where such effects are debated, it may be premature to identify and evaluate PM&E measures until the results of the studies of project effects are known. Eagle Creek Hydro's proposed *Study 3 – Fisheries Survey Study* (as modified herein) and our recommended desktop entrainment study, American eel study, and American shad surveys (discussed in section 2, above) would provide information that would determine the need for project and species specific fish passage and/or protection measures [sections 5.9(b)(4), (5) and (6)]. As a result, conducting the requested Upstream and Downstream Fish Passage Study before a specific need has been demonstrated would be premature and is not a cost effective approach [section 5.9(b)(7)].

Alewife Hydro-Acoustic Study

Issue

The Projects' reservoirs have populations of alewife that support predatory fish and provide forage for bald eagles.

Study Request

NYSDEC and the FWS, request that Eagle Creek Hydro assess the abundance and distribution of alewife in the Projects' reservoirs with the use of hydro-acoustic surveys. The NYSDEC states that knowing the abundance of alewife, distribution in the reservoir and proximity to the projects' intakes is needed to understand how the Projects' affect the alewife population. It is NYSDEC's position that hydro-acoustic surveys may be the only viable method to evaluate the current status of alewife in project reservoirs.

Discussion and Staff Recommendation

In its response to this study request Eagle Creek Hydro states that there is sufficient information on alewife populations in the Mongaup River system, such that, a targeted hydro-acoustic study is not necessary. The FWS asserts that the current status of the alewife populations must be understood for NYSDEC to manage the reservoirs' fisheries.

In Appendix C of the RSP, Eagle Creek Hydro provided a summary table of NYSDEC Fish Surveys performed in Mongaup River system between 1988 and 2016. The table includes a list of 62 studies, eight of which targeted alewife, and notes that alewife have been found in each of the Projects' reservoirs. Other than in a single paragraph on the LMS entrainment study (where it was determined that high alewife entrainment occurs during the winter), alewife is not mentioned in the PAD [sections 5.9(b)(4) and (5)].

While the agencies debate the need for new current information on alewife distribution and abundance they give no consideration for the apparent existing information [section 5.9(b)(4)]. Similarly, although Eagle Creek Hydro argues the relevance and adequacy of the existing information, it did not provide the information or explain how the existing information will support the development of a license application and an analysis of potential project effects [section 5.9(b)(4)]. Subsequently, we are unable, at this time, to determine whether the requested study and subsequent additional information is needed [section 5.9(b)(4)].

As a result, we recommend that Eagle Creek Hydro conduct a desktop analysis of the existing fisheries studies, including those listed in Appendix C of the RSP, and develop an alewife specific study report that summarizes the data for each reservoir describes the relative abundance, habitat use, seasonal proximity to project intakes, and population trends. The study report should evaluate the adequacy of the existing data to inform an analysis of project effects, and if inadequacies are identified, propose a field

study to fill the data gaps. We estimate the cost of conducting this analysis and developing the report to be $20,000 [section 5.9(b)(7)].

Socioeconomic Study

Study Request

HOOT requests a socioeconomic study of the projects' impact on the regional economy. HOOT suggests Eagle Creek Hydro use the IMPLAN method, which the Forest Service developed in the mid-1970s as a planning tool for weighing the community impact of various projects and actions involving natural resources. HOOT points out that these studies have been conducted during at least two other relicensing efforts.

HOOT bases this request, in part, on their assertion that the projects receive a significant amount of recreation use, and, therefore, can be assumed to have a significant impact on the regional economy. HOOT states that the results of this study would inform an analysis of potential project operations that would stabilize the reservoir levels for aesthetic and recreation benefits.

Eagle Creek Hydro rejected HOOT's request, in part, on the grounds of cost, citing a cost estimate range of $250,000-$500,000. HOOT disputes the licensee's cost estimate as being, "an order of magnitude" higher than necessary, but does not provide their own estimate of the cost to conduct this study.

HOOT disputes the licensees' assertion that the Commission does not typically "quantify" non-power benefits, but their dispute seems to be based on a distinction between the literal and intended meaning of the word. We understand the licensee to mean "economically quantify" in terms of dollars, rather than simply anything that can be counted (e.g. recreation user days, fish and wildlife stock estimates, etc.).

Discussion and Staff Recommendation

HOOT's assertion that the projects receive a significant amount of recreation use is not based on any available data. In fact, the PAD notes that FERC form 80 data shows the projects received only 11,653 recreation user days in 2015. The Toronto Reservoir, specifically, received 2,792 recreation user days, with an average of 140 user days on peak weekends. Typically, a recreation user day is defined as any visit to any site within a 24-hour period, which means that these figures likely represent much fewer individuals

who visit the project multiple times throughout the year. Although the projects are clearly important to stakeholders, local residents, and shoreline residents, the assertion that they support a significant amount of recreation use does not appear to be accurate [section 5.9(b)(4)].

HOOT states that the results of this study would likely lead to a consideration of dramatically altering project operations to stabilize reservoir levels in order to provide aesthetic and recreational benefits to project residents and recreation users. While it is premature to discuss potential license conditions at this time, the results of *Study 1 – Reservoir Water Level Fluctuation/Operation Model Study; Study 7 – Recreation Facility Inventory, Recreation Use and Needs Assessment, and Reservoir Surface Area Assessment;* and *Study 9 – Shoreline Management Assessment* will be sufficient to inform any potential license conditions related to project operations' effects on reservoir levels, recreation, and aesthetics. The requested socioeconomic study, therefore, would not be necessary to inform any potential license conditions. Eagle Creek Hydro correctly notes that the Commission does not typically quantify non-power benefits such as recreation and aesthetics in economic terms, despite HOOT's assertion to the contrary, which appears to be based on a misunderstanding of the intended meaning of the word "quantify" [section 5.9(b)(5)].

Therefore, given that the other studies noted above will provide the data necessary for our environmental analysis, conducting the requested socioeconomic study is not justified [section 5.9(b)(7)]. For this reason, and the reasons noted above, we do not recommend that Eagle Creek Hydro conduct HOOT's requested socioeconomic study.

LITERATURE CITED

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Vaske, J.J. 2008. Survey research and analysis: applications in parks, recreation, and human dimensions. Venture Publishing, Inc., State College, Pennsylvania. 635 pp.

Whittaker, D., Shelby, B. and J. Gangemi. 2005. Flows and recreation: A guide to studies for river professionals. Whittaker, Shelby, & Gangemi, and the Hydropower Reform Coalition.

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

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21 South Putt Corners Road, New Paltz, NY 12561-1620
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February 28, 2018

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

Re: Rio Hydroelectric Project (FERC No. 9690)
Mongaup Falls Hydroelectric Project (FERC No. 10481)
Swinging Bridge Hydroelectric Project (FERC No. 10482)
FERC Study Plan Determination

Dear Secretary Bose:

The New York State Department of Environmental Conservation ("NYSDEC") reviewed the Study Plan Determination for the above-referenced Rio, Mongaup Falls, and Swinging Bridge Hydroelectric Projects issued by the Federal Energy Regulatory Commission ("FERC") on February 9, 2018 ("Study Plan Determination"). The Study Plan Determination pertains to the relicensing process initiated by Eagle Creek Hydro Power, LLC, Eagle Creek Water Resources, LLC, and Eagle Creek Land Resources, LLC (collectively, "Eagle Creek Hydro") for Swinging Bridge Project No. 10482, Mongaup Falls Project No. 10481, and Rio Project No. 9690 (collectively, "Mongaup River Hydroelectric Projects"). NYSDEC understands the Study Plan Determination process involved considerable consolidation, review, synthesis, and coordination with the many stakeholders involved in the relicensing process. However, NYSDEC takes issue with studies in the Study Plan Determination that do not fully incorporate NYSDEC's requested studies, comments, and concerns.

NYSDEC advocated its position regarding studies to be conducted for the Mongaup River Hydroelectric Projects relicensing process on multiple occasions. NYSDEC provided initial study requests in a letter to Eagle Creek Hydro dated July 28, 2017. NYSDEC provided updated study requests and comments on the Proposed Study Plan in a letter filed with FERC and dated December 11, 2017. Additionally, NYSDEC commented on the Revised Study Plan in a letter filed with FERC and dated January 25, 2018.

Please be advised that, while NYSDEC will not engage in the formal FERC study dispute resolution process pursuant to 18 CFR § 5.14, NYSDEC intends to exercise its independent statutory authority pursuant to Clean Water Act ("CWA") § 401 to address NYSDEC concerns regarding the Study Plan Determination. *See* 33 USC § 1341(a)(1).

Re: Rio Hydroelectric Project (FERC No. 9690)
Mongaup Falls Hydroelectric Project (FERC No. 10481)
Swinging Bridge Hydroelectric Project (FERC No. 10482)
FERC Study Plan Determination

As FERC explicitly acknowledged in the Study Plan Determination, nothing therein is intended to limit an agency's exercise of its own authority to require additional studies. Specifically, NYSDEC may require Eagle Creek Hydro to conduct additional studies pursuant to a CWA § 401 water quality certification process associated with any or all of the Mongaup River Hydroelectric Projects. This would include utilizing the water quality certification processes as a mechanism to collect gaps in information that may occur from the implementation of the Study Plan Determination, or obtain any other information that may be necessary in order for NYSDEC to assess whether the Mongaup River Hydroelectric Projects will meet water quality standards.

In particular, CWA § 401 requires Eagle Creek Hydro to obtain two separate water quality certifications from NYSDEC for the following federal license actions: 1) amendment of the existing FERC license for Swinging Bridge Project No. 10482; and 2) relicensing of the Mongaup River Hydroelectric Projects.

NYSDEC will consult with Eagle Creek Hydro during the processing of both CWA § 401 water quality certificate applications and provide specific information, such as the appropriate locations and methodologies, regarding any studies required to supplement the information gathered by the implementation of the Study Plan Determination. For example, NYSDEC may require Eagle Creek Hydro to obtain and provide additional fisheries survey data and water quality data for the impoundments and reaches within the Mongaup River Hydroelectric Projects boundary. NYSDEC may also identify and request additional information needed as part of the NYSDEC water quality certification processes upon review of Eagle Creek Hydro's Initial Study Report developed pursuant to the Study Plan Determination. This may include, but is not limited to, information regarding fish entrainment/impingement, bypass/base flow evaluation, and bald eagle management.

Thank you for the opportunity to comment on the Study Plan Determination. If you have any questions, please contact me at (845) 256-3040 or joseph.murray@dec.ny.gov.

Sincerely,

Joseph R. Murray
Environmental Analyst 1

ecc: John Petronella, NYSDEC
Mike Flaherty, NYSDEC
Mike DiSarno, NYSDEC
Brian Drumm, NYSDEC
Nate Ermer, NYSDEC

Re: Rio Hydroelectric Project (FERC No. 9690)
Mongaup Falls Hydroelectric Project (FERC No. 10481)
Swinging Bridge Hydroelectric Project (FERC No. 10482)
FERC Study Plan Determination

Jon Binder, NYSDEC
Kara E. Paulsen, NYSDEC
John Wiley, USFWS
Kevin Mendik, NPS
Quinn Emmering, FERC
Robert Gates, Eagle Creek Hydro
Jim Gibson, HDR

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

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March 14, 2018

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

RE: New York State Department of Environmental Conservation Motion for Intervention
Project No.: 10482-118

Dear Secretary Bose:

Enclosed please find New York State Department of Environmental Conservation's motion for intervention in the above-referenced proceeding. This motion has been submitted by electronic filing and served to the persons identified on the Federal Energy Regulatory Commission service list for this proceeding.

Sincerely,

/s

Kara E. Paulsen, Esq.

Enc.

ecc: FERC service list
Jonathan Binder, NYSDEC
Joseph Murray, NYSDEC

UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

Eagle Creek Hydro Power, LLC
Eagle Creek Water Resources, LLC
Eagle Creek Land Resources, LLC

Project No.: 10482-118

MOTION TO INTERVENE

Pursuant to 18 CFR § 385.214, the New York State Department of Conservation ("NYSDEC" or "Petitioner") hereby petitions the Federal Energy Regulatory Commission for an order granting it party status in the above-captioned proceeding.

I. Communications and Service

The persons to whom communication regarding this Motion should be addressed and upon whom service of all pleadings and other documents in this proceeding should be made are:

Kara E. Paulsen, Esq.
Excelsior Service Fellow/Attorney
Office of General Counsel
NYSDEC
625 Broadway, 14th Floor
Albany, New York 12233-1500
Phone: (518) 402-9191
kara.paulsen@dec.ny.gov

Joseph R. Murray
Environmental Analyst
Division of Environmental Permits
NYSDEC
21 South Putt Corners Road
New Paltz, New York 12561
Phone: (845) 256-3040
joseph.murray@dec.ny.gov

II. Interest of Petitioner

As grounds for its Motion to Intervene, NYSDEC respectfully asserts:

1. Petitioner is a duly constituted Department of the Government of the State of New York, charged by law with administrative management of the State's fish, wildlife, water, and other natural resources.

2. The project is located within the State of New York and impacts the natural resources and environment of the State of New York.

3. As the agency of the State of New York responsible for administering New York State's Environmental Conservation Law, Petitioner is the State agency most intimately involved with and responsible for analyzing environmental impacts of hydroelectric projects. Petitioner's resources, expertise, and familiarly with the locale of the proposed project and related resources will be of considerable assistance to the Commission during the course of the above-captioned proceeding.

4. Petitioner is the State agency charged by law to consider and, upon proper showing, issue water quality certifications for hydroelectric facilities pursuant to Clean Water Act § 401, 33 USC § 1341.

5. Petitioner's participation as an agency of the Executive Branch of the State of New York government is in the public interest, as well as in the interest of the public health, welfare, and the environment.

6. Granting NYSDEC party status will not disrupt the proceeding.

7. NYSDEC's interest is not adequately represented by any other party hereto.

8. Existing parties will be prejudiced by, nor will they sustain any additional burden by NYSDEC becoming a party to this proceeding.

III. Conclusion

WHEREFORE, Petitioner respectfully requests that the Federal Energy Regulatory Commission grant NYSDEC intervention as a fully party in this proceeding. NYSDEC does not request a hearing in this proceeding at this time; however, if a hearing is ordered, NYSDEC further requests that it be granted the right to have notice of and an opportunity to appear at all hearings in this proceeding, to produce evidence and witnesses, to cross-examine witnesses, and to be heard by counsel or other representatives for briefing and oral argument if oral argument is granted.

Respectfully submitted,

/s

Kara E. Paulsen, Esq.
New York State Department of
Environmental Conservation
Office of General Counsel
625 Broadway, 14th Floor
Albany, New York 12233-1500
Phone: (518) 402-9191
kara.paulsen@dec.ny.gov

Dated: March 14, 2018
Albany, New York

CERTIFICATE OF SERVICE

I hereby certify that I have this day served the foregoing document on each person designated on the official service list compiled in this proceeding by the Secretary of the Federal Energy Regulatory Commission.

Respectfully submitted,

/s

Kara E. Paulsen, Esq.
New York State Department of
Environmental Conservation
Office of General Counsel
625 Broadway, 14th Floor
Albany, New York 12233-1500
Phone: (518) 402-9191
kara.paulsen@dec.ny.gov

Dated: March 14, 2018
Albany, New York

April 17, 2018

Joseph Murray
New York Department of Environmental Conservation
Regional Permit Administrator
21 South Putt Corners Road
New Paltz, NY 12561-1620

John Wiley
U.S. Fish and Wildlife Service
3817 Luker Road
Cortland, NY 13045

Subject: **Swinging Bridge Hydroelectric Project (FERC No. 10482-117)**
Mongaup Falls Hydroelectric Project (FERC No. 10481-067)
Rio Hydroelectric Project (FERC No. 9690-112)
Eel Survey Consultation

Dear Mr. Murray and Wiley:

Eagle Creek Hydro Power, LLC, Eagle Creek Water Resources, LLC, and Eagle Creek Land Resources, LLC (collectively "Eagle Creek") herein submits this letter of consultation associated with the Federal Energy Regulatory Commission (FERC or Commission)-required eel survey to be performed in 2018 in support of the FERC relicensing of the Swinging Bridge, Mongaup Falls, and Rio Hydroelectric Projects (collectively "Mongaup River Projects").

Background

On January 10, 2018, Eagle Creek filed with the Commission the Revised Study Plan (RSP) for the Mongaup River Projects. On February 9, 2018, the Commission issued the Study Plan Determination (SPD) approving and modifying the studies proposed in the RSP by Eagle Creek, including a modification to the Fisheries Survey Study to conduct eel surveys at the Rio Project.

The SPD requires that Eagle Creek conduct eel surveys for upstream migrating eel at the Rio Project's tailrace, the minimum flow turbine tailrace, and at the base of Rio Dam. The surveys are to consist of visual nighttime spotlight surveys and baited eel pot deployment. The SPD also requires that the number and specific location of the eel pots be developed in consultation with the U.S. Fish and Wildlife Service (USFWS) and New York State Department of Environmental Conservation (NYSDEC).

Proposed Eel Pot Locations

Eagle Creek proposes deployment of a total of 7 baited eel pots at the Rio Project in support of the required eel surveys, as further described in the table below and shown on the enclosed figure.

Proposed Eel Pot Locations

Eel Pot No.	Eel Pot Location (looking downstream)
1	Dam Toe River Right
2	Dam Toe River Left
3	Mouth of Uppermost Unnamed Tributary
4	Unit No. 3 Tailrace
5	Bypassed Reach Lower
6	Unit No. 1/2 Tailrace Right
7	Unit No. 1/2 Tailrace Left

Eagle Creek anticipates commencement of the eel surveys in early May and, therefore, would appreciate any comments you may have on the aforementioned proposed number and location of eel pots no later than April 30, 2018.

If there are any questions regarding the information provided herein, please do not hesitate to contact Michael Scarzello with Eagle Creek at (973) 998-8400 or Jim Gibson with HDR at (315) 414-2202.

Sincerely,
Eagle Creek (Licensees)

Mr. Michael Scarzello

Enclosure

MONGAUP RIVER HYDROELECTRIC PROJECTS

FISHERIES SURVEY STUDY

PROPOSED EEL POT LOCATIONS

\\PWME-INFS01\GIS\GIS2\PROJECTS\EAGLE_CREEK\10059619_EC_MONGAUP_RELIC_PHASE_2\7.0_GIS_MODELS\7.2_WORK_IN_PROGRESS\MAP_DOCS\FINAL\MAP_ANSIA_20180417_RIO_PROPOSED_EEL_POT_LOCATIONS.MXD

APRIL 2018

April 17, 2018

Joseph Murray
New York Department of Environmental Conservation
Regional Permit Administrator
21 South Putt Corners Road
New Paltz, NY 12561-1620

John Wiley
U.S. Fish and Wildlife Service
3817 Luker Road
Cortland, NY 13045

Kevin Mendik
National Park Service
Northeast Region
15 State Street
Boston, MA 02109-3572

Subject: **Swinging Bridge Hydroelectric Project (FERC No. 10482-117)**
Mongaup Falls Hydroelectric Project (FERC No. 10481-067)
Rio Hydroelectric Project (FERC No. 9690-112)
Delaware River Water Temperature Monitoring Consultation

Dear Addressees:

Eagle Creek Hydro Power, LLC, Eagle Creek Water Resources, LLC, and Eagle Creek Land Resources, LLC (collectively "Eagle Creek") herein submits this letter of consultation associated with the Federal Energy Regulatory Commission (FERC or Commission)-required Water Quality Study to be performed in 2018 in support of the FERC relicensing of the Swinging Bridge, Mongaup Falls, and Rio Hydroelectric Projects (collectively "Mongaup River Projects").

Background

On January 10, 2018, Eagle Creek filed with the Commission the Revised Study Plan (RSP) for the Mongaup River Projects. On February 9, 2018, the Commission issued the Study Plan Determination (SPD) approving and modifying the studies proposed in the RSP by Eagle Creek, including a modification to the Water Quality Study to conduct water temperature monitoring in the Delaware River.

The SPD requires that Eagle Creek conduct water temperature monitoring in the Delaware River at one location upstream of the Mongaup River confluence and at up to three locations downstream of the confluence. The water temperature monitoring results are to be used to articulate temperature effects of the Rio Project operations on the Delaware River water temperatures and to delineate the zone of thermal mixing within the Delaware River. The SPD also requires that specific locations of the water monitoring location be determined in consultation with the National Park Service (NPS), U.S.

Fish and Wildlife Service (USFWS) and New York State Department of Environmental Conservation (NYSDEC).

Proposed Water Temperature Monitoring Locations

Eagle Creek proposes deployment of one water temperature monitor in the Delaware River upstream of the Mongaup River confluence and three water temperature monitors in the Delaware River downstream of the Mongaup River confluence, as approximately shown on the enclosed figure.

Monitoring devices will consist of an Onset HOBO Tidbit v2 or equivalent. The monitors will be submerged at mid-depth in the water column using an anchoring mechanism (e.g., anchor or cinder block) and PVC shroud. Monitors will be deployed from the left bank of the river towards river center as can be safely reached via wading. Monitors will continuously record temperature at 15-minute intervals from May through October 2018 and will be serviced on a monthly basis, or as required.

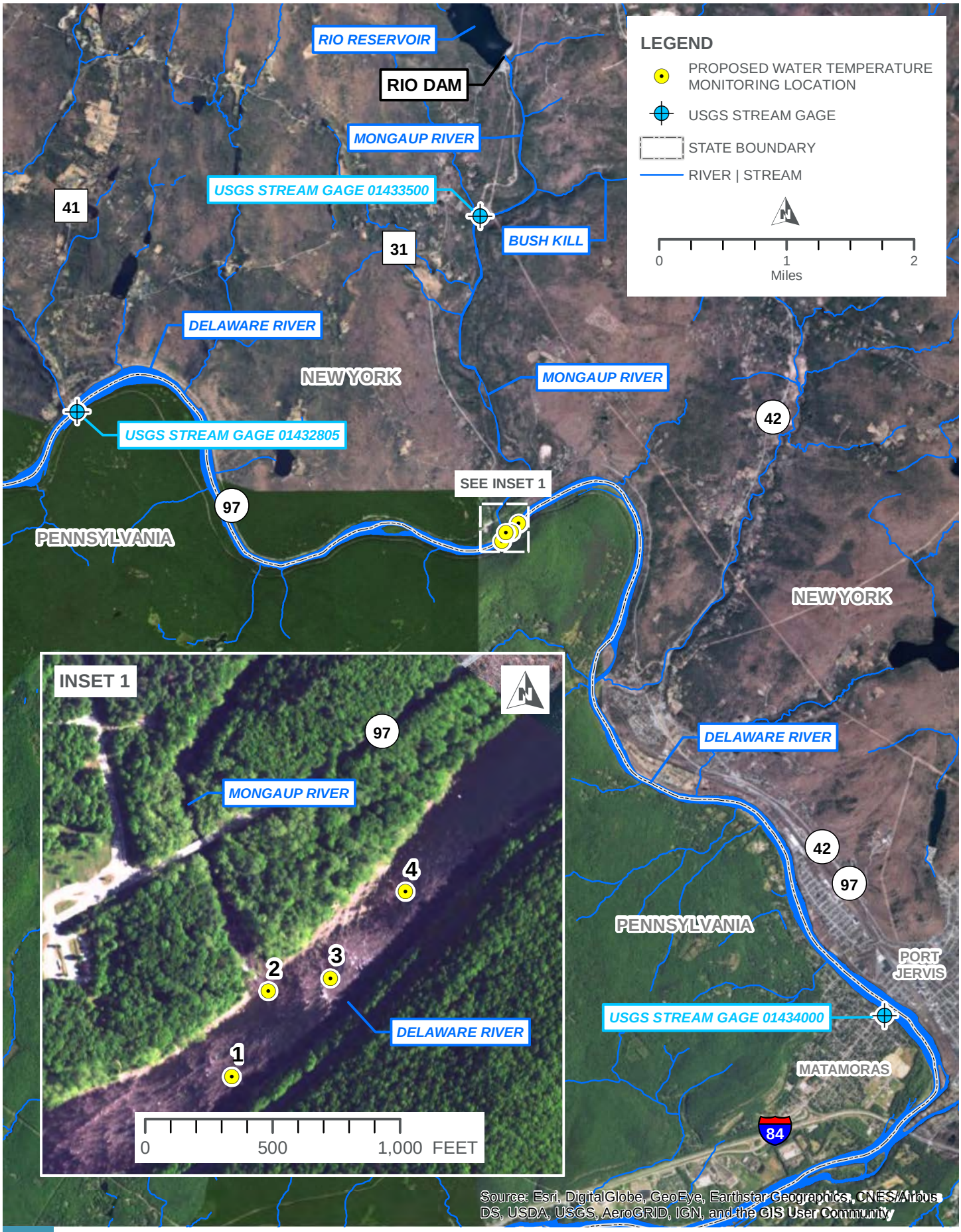
Eagle Creek anticipates commencement of the water temperature monitoring in early May and, therefore, would appreciate any comments you may have on the aforementioned proposed monitoring locations no later than April 30, 2018.

If there are any questions regarding the information provided herein, please do not hesitate to contact Michael Scarzello with Eagle Creek at (973) 998-8400 or Jim Gibson with HDR at (315) 414-2202.

Sincerely,
Eagle Creek (Licensees)

Mr. Michael Scarzello

Enclosure



HDR

EAGLE CREEK RENEWABLE ENERGY
— EXCELLENCE IN HYDRO —

MONGAUP RIVER HYDROELECTRIC PROJECTS

WATER QUALITY STUDY

PROPOSED WATER TEMPERATURE MONITORING LOCATIONS

\\PWME-INFS01\GIS\GIS2\PROJECTS\EAGLE_CREEK\10059619_EC_MONGAUP_RELIC_PHASE_2\7.0_GIS_MODELS\7.2_WORK_IN_PROGRESS\MAP_DOCS\FINAL\MAP_ANSIA_20180416_RIO_PROPOSED_WQ_LOCATIONS.MXD

APRIL 2018

E-file Submission

May 1, 2018

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

Subject: **Swinging Bridge Hydroelectric Project (FERC No. P-10482-117)**
Mongaup Falls Hydroelectric Project (FERC No. P-10481-067)
Rio Hydroelectric Project (FERC No. P-9690-112)
First Quarterly Study Progress Report

Dear Secretary Bose:

Eagle Creek Hydro Power, LLC, Eagle Creek Water Resources, LLC, and Eagle Creek Land Resources, LLC (collectively "Eagle Creek") herein submits the first quarterly study progress report for the Swinging Bridge, Mongaup Falls, and Rio Hydroelectric Projects (collectively "Mongaup River Hydroelectric Projects" or "Projects"). The Mongaup River Hydroelectric Projects are located on the Mongaup River in Sullivan and Orange Counties, New York, and are licensed by the Federal Energy Regulatory Commission ("FERC" or "Commission").

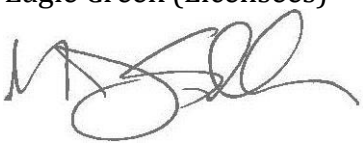
The FERC licenses for the Mongaup River Hydroelectric Projects expire on March 31, 2022, and Eagle Creek is pursuing new licenses for each of the three Projects. On March 30, 2017, Eagle Creek filed with FERC Notices of Intent (NOIs) to file a license application for new licenses for the Projects. Consistent with the Commission's Integrated Licensing Process (ILP) and 18 CFR §5.13, Eagle Creek filed the Revised Study Plan (RSP) with the Commission on January 10, 2018 and the Commission issued the Study Plan Determination (SPD) on February 9, 2018.

Pursuant to the RSP, Eagle Creek herein submits the first quarterly study progress report for the period from February 10, 2018 through May 1, 2018 for the Mongaup River Hydroelectric Projects. The enclosed table (report) provides a list of the approved studies and associated status of progress as well as any modifications to the approved methodologies. Additionally, the SPD recommended that Eagle Creek provide an update to the Schedule for Conducting Proposed Studies included in Section 19 of the RSP. Accordingly, Eagle Creek herein also submits an updated schedule reflective of modifications that resulted from the Commission's SPD.

In addition to filing a copy of this letter with the Commission, Eagle Creek is distributing this letter to the parties listed on the enclosed distribution list. For parties who have provided an email address, Eagle Creek is distributing this letter via email, otherwise Eagle Creek is distributing this letter via mail.

If there are any questions regarding this information, please do not hesitate to contact Michael Scarzello with Eagle Creek at (973) 998-8400 or Jim Gibson with HDR at (315) 414-2202.

Sincerely,
Eagle Creek (Licensees)



Mr. Michael Scarzello
Director

Attachments (3)

cc: Attached Distribution List

FIRST QUARTERLY STUDY PROGRESS REPORT

Mongaup River Hydroelectric Projects First Quarterly Study Progress Report (February 10, 2018 – May 1, 2018)			
No.	**Study**	**Status**	**Modifications to Methodology**
1	Reservoir Water Level Fluctuation/Operation Model Study	Consistent with the approved study plan, the study will be completed prior to issuance of the Initial Study Report (ISR).	None.
2	Aquatic Habitat Assessment Study	Consistent with the approved study plan, the study will be completed prior to issuance of the ISR.	None.
3	Fisheries Survey Study	Consistent with the approved study plan: • A collector's permit was obtained; • Via letter dated April 17, 2018, consultation was initiated with the U.S. Fish and Wildlife Service (USFWS) and New York State Department of Environmental Conservation (NYSDEC) to determine the number and location of baited American eel pots to be deployed as part of the weekly eel surveys at the Rio Project. The letter requested a response by April 30, 2018; • Weekly American eel surveys are anticipated to commence in early May; • The spring seasonal experimental gillnet sample events are anticipated to occur in late May and mid-June; and • The study will be completed prior to issuance of the ISR.	None.
4	Fish Entrainment/ Impingement Study	Consistent with the approved study plan, the study will be completed prior to issuance of the ISR.	None.
5	Water Quality Study	Consistent with the approved study plan: • The water quality study commenced on April 24-26 with deployment of the water quality monitoring devices at 18 locations throughout the Project area and collection of impoundment profile data; • Via letter dated April 17, 2018, consultation was initiated with the National Park Service (NPS), USFWS, and NYSDEC to determine the location of water temperature monitoring in the Delaware River. The letter requested a response by April 30, 2018; • Water temperature monitors in the Delaware River are anticipated to be deployed in early May; • Existing project operations data will be used to calculate stream flow data for the Project stream reaches; • Stream flow on Black Brook will be calculated from a daily staff gage reading at the Black Brook uncontrolled, overflow spillway; and • The study will be completed prior to issuance of the ISR.	None.

Mongaup River Hydroelectric Projects First Quarterly Study Progress Report (February 10, 2018 – May 1, 2018)			
No.	**Study**	**Status**	**Modifications to Methodology**
6	Macroinvertebrate and Mussel Survey	Consistent with the approved study plan: • A collector's permit was obtained; and • The study will be completed prior to issuance of the ISR.	None.
7	Recreation Facility Inventory, Recreation Use and Needs Assessment, and Reservoir Surface Area Assessment Study	Consistent with the approved study plan, recreation spot counts and recreation user surveys commenced on April 1 at the recreation sites. Pursuant to the SPD, the recreation use/user surveys will be performed between April 1, 2018 and March 31, 2019. The results of this study will be provided in a report subsequent to the completion of the study.	None.
8	Whitewater Boating Assessment Study	Consistent with the approved study plan: • A schedule for structured interviews of whitewater boaters was developed for ten (10) whitewater release dates scheduled for 2018 (based on the months which would likely have the most number of boaters); • Structured interviews of whitewater boaters during scheduled whitewater releases will commence in May; • Collection of boater sign-in logs for future analysis has commenced; and • The study will be completed prior to issuance of the ISR.	None.
9	Shoreline Management Assessment Study	Consistent with the approved study plan: • Consultation regarding the means of distribution of the survey is anticipated to occur in June 2018; • Distribution of the survey will occur in summer 2018; and • The study will be completed prior to issuance of the ISR.	None.
10	Cultural Resources Study	Consistent with the approved study plan, • Consultation regarding the APE and the Phase IA literature review and sensitivity assessment are anticipated to occur in May 2018; and • The study will be completed prior to issuance of the ISR.	None.
11	Black Brook Dam Decommissioning Study	Consistent with the approved study plan, the study will be completed prior to issuance of the ISR.	None.

Mongaup River Hydroelectric Projects First Quarterly Study Progress Report (February 10, 2018 – May 1, 2018)			
No.	**Study**	**Status**	**Modifications to Methodology**
12	Special-Status Species Survey Study	Consistent with the approved study plan: • A collector's permit was obtained; • Consultation with the USFWS and NYSDEC to confirm which special-status species potentially occur in the Projects' area is anticipated to be performed in May; and • The study will be completed prior to issuance of the ISR.	None.
13	Bald Eagle Management Study	Consistent with the approved study plan, consultation with the USFWS, NPS, NYSDEC, and Delaware Highlands Conservancy (DHC) to obtain existing information on eagles in the Mongaup River System is anticipated to be performed in May. Pursuant to the SPD, the visual field surveys will be performed between November 1, 2018 and June 30, 2019. The results of this study will be provided in a report subsequent to the completion of the study.	None.
14	Bypass/Base Flow Transect Evaluation Study	Consistent with the approved study plan, the study will be completed prior to issuance of the ISR.	None.
15	Alewife Study	Consistent with the approved study plan, the study will be completed prior to issuance of the ISR.	None.
16	Wetland Study	Consistent with the approved study plan, the study will be completed prior to issuance of the ISR.	None.

SCHEDULE FOR CONDUCTING PROPOSED STUDIES

Mongaup River Hydroelectric Projects Schedule for Conducting Proposed Studies[1]	
Activity	**Date[2]**
Reservoir Water Level Fluctuation/Operation Study	March 2018 - February 2019
Aquatic Habitat Assessment Study	March 2018 - February 2019
Fisheries Survey Study	March 2018 - February 2019
Fish Entrainment/Impingement Study	March 2018 – February 2019
Water Quality Study	March 2018 - February 2019
Macroinvertebrate and Mussel Survey Study	March 2018 - February 2019
Recreation Facility Inventory, Recreation Use and Needs Assessment, and Reservoir Surface Area Assessment Study	March 2018 – March 2019
Whitewater Boating Assessment Study	March 2018 - February 2019
Shoreline Management Assessment Study	March 2018 - February 2019
Cultural Resources Study	March 2018 - February 2019
Black Brook Dam Decommission Study	March 2018 - February 2019
Special-Status Species Survey Study	March 2018 - February 2019
Bald Eagle Management Study	March 2018 - June 2019
Bypass/Base Flow Transect Evaluation Study	March 2018 - February 2019
Wetlands Study	March 2018 – February 2019
Alewife Study	March 2018 – February 2019
Three-Month Progress Reports	May 1, August 1, November 1, 2018
File Initial Study Report with FERC	February 9, 2019
Hold Initial Study Report Meeting	<February 24, 2019
File Initial Study Report Meeting Summary with FERC	<March 11, 2019
Conduct Second Season of Studies (if necessary)	2019
File Updated Study Report (if necessary)	February 9, 2020
Hold Updated Study Report Meeting (if necessary)	<February 24, 2020
File Updated Study Report Meeting Summary with FERC (if necessary)	<March 10, 2020
File Preliminary Licensing Proposal or Draft License Application	November 2, 2019
Stakeholders File Comments on Preliminary Licensing Proposal or Draft License Application with FERC	January 31, 2020
File Final License Application with FERC	March 31, 2020

1. If due date falls on a weekend or holiday, the due date is the following business day.
2. Dates associated with specific studies represent all proposed study activities, including field activities, desktop activities and report development.

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Swinging Bridge Hydroelectric Project (FERC No. 10482)
Mongaup Falls Hydroelectric Project (FERC No. 10481)
Rio Hydroelectric Project (FERC No. 9690)
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Mongaup Falls Hydroelectric Project (FERC No. 10481)
Rio Hydroelectric Project (FERC No. 9690)
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Mongaup Falls Hydroelectric Project (FERC No. 10481)
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Rio Hydroelectric Project (FERC No. 9690)
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Swinging Bridge Hydroelectric Project (FERC No. 10482)
Mongaup Falls Hydroelectric Project (FERC No. 10481)
Rio Hydroelectric Project (FERC No. 9690)
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*Contact receives a hard copy of the distribution via mail and an electronic copy of the distribution via email.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
3817 Luker Road
Cortland, New York 13045

May 7, 2018

Mr. Michael Scarzello
Eagle Creek Renewable Energy, LLC
116 North State Street
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Neshkoro, WI 54960-0167

RE: Rio Hydroelectric Project (FERC No. P-9690-112)
Mongaup Falls Hydroelectric Project (FERC No. P-10481-067)
Swinging Bridge Hydroelectric Project (FERC No. P-10482-117)
Comments on Eel Survey and Delaware River Temperature Monitoring Study

Dear Mr. Scarzello:

The U.S. Fish and Wildlife Service (Service) has reviewed the April 17, 2018, letters from Eagle Creek requesting our comments on the eel survey and Delaware River temperature monitoring study to be conducted during the relicensing of the Rio (FERC No. 9690-112), Mongaup Falls (FERC No. 10481-067), and Swinging Bridge Hydroelectric Projects (FERC No. 10482-117). The three projects, collectively known as the Mongaup River Hydroelectric Projects (Project or Projects), are located on the Mongaup River in Sullivan and Orange Counties, New York. Consultation with the Service was required in the February 9, 2018, Study Plan Determination (SPD) for the Projects issued by the Federal Energy Regulatory Commission (FERC).

Eel Survey

The SPD requires Eagle Creek to:

"...conduct systematic surveys for upstream migrating eel, at a minimum, at the Rio Project's tailrace, the minimum flow turbine tailrace, and at the base of Rio Dam. The study should be designed to identify areas of eels staging in pools or attempting to ascend wetted structures and, if appropriate, inform an American eel upstream passage feasibility assessment. The study should include visual surveys at night, at least once per week, on foot (wading) or from a boat from spring through fall and target areas where eels are likely to congregate below the Rio Dam, powerhouse tailraces, and within the bypassed reach, and at locations of significant leakage. Data collected should include location, observation of eels (presence, absence, numbers, and estimated sizes), time and date of observation, field notes on weather conditions, and moon phase. Other data that should be recorded include notes on project operations and flow data

during sampling. In addition, baited eel pots should be deployed in the project's tailraces, bypassed reach, and at the base of the Rio Dam and fished once per week (overnight sets) for the duration of the study. The number and specific location of the eel pots should be developed in consultation with the agencies and include other locations that upstream migrating eels may congregate. At a minimum, the data collected should include location, number captured, relative sizes, and time and date. Eels collected from baited eel pots should be marked in an effort to identify individuals who may have already been captured to avoid overestimating eel abundance. Any recaptures should be recorded."

Eagle Creek proposes to deploy a total of seven baited eel pots in support of the required eel survey. The proposed locations are in two general locations: near the dam and minimum flow powerhouse and near the powerhouse. Specifically these locations (looking downstream) are at the river right and river left toe of the dam, the mouth of an unnamed tributary on river left between the dam and minimum flow powerhouse, just downstream from the minimum flow powerhouse tailrace on river right, on river right and river left below a water level control dam at the end of the powerhouse tailrace, and just upstream of the powerhouse tailrace on river right.

The locations proposed generally reflect the requirements of the SPD; however, the Service has the following comments on the proposed eel pot location and number. Two additional eel pots should be placed near the upstream end of the Project tailrace as eels may seek upstream passage beyond the low barrier presented by the water control dam at the downstream end of the tailrace. The degree to which eels may reach the upstream end of the tailrace will be important for our analysis of upstream passage at the Project. We agree that eel pots should be placed at the water control dam, as this location may be an area where eels may congregate. Similarly, the eel pot proposed for just downstream of the minimum flow tailrace should be placed within the tailrace as this is the most likely area for eels to congregate at the minimum flow powerhouse. The locations for the eel pots below the dam toe appear to be located in unsuitable depth conditions. The eel pots at the dam toe should be placed in sufficient depth water to enable effective sampling of eels that may congregate below the dam.

We note that the requirement for eel pots in the eel survey may limit sampling effectiveness for smaller size classes of eels including elvers and small yellow stage juveniles. The timing of the study from May – October may have limited the ability for Eagle Creek to sample during the height of the upstream migration, although there is little data available regarding the upstream migration period at the Project. While the required visual surveys at night may allow for some data to be collected for smaller size classes, the Service recommends that Eagle Creek deploy additional sampling devices to target smaller size class individuals. Eel mops have been shown to be effective in other studies in New York. We also recommend that Eagle Creek identify if the peak of the spring migration occurs earlier than May in the Delaware River and seek to sample during this period in 2019.

Delaware River Temperature Monitoring

The SPD requires Eagle Creek to:

"...monitor water temperature in the Delaware River at one location upstream of Mongaup River confluence and at up to three locations downstream of the confluence. Eagle Creek Hydro should use the resulting data to articulate temperature effects of the Rio Project operations on Delaware River water temperatures and to delineate the zone of thermal mixing within the Delaware River. Specific locations should be determined in consultation with the Park Service, FWS, and New York DEC."

Eagle Creek proposes to deploy one water temperature monitor roughly in the center of the Delaware River approximately 200 feet upstream of the Mongaup River, one at the mouth of the Mongaup River, and two just river left of the center at approximately 250 and 500 feet downstream of the mouth of the Mongaup River. The Service conferred with the National Park Service (NPS) staff at the Upper Delaware Scenic and Recreational River regarding their experience with the thermal gradients in the Delaware River. We have incorporated their comments into our reply.

The Service does not believe that the current level of effort or proposed locations will provide the data needed to delineate the zone of thermal mixing within the Delaware River. Generally, when tributary flows enter a larger stream, they are deflected along the near-shore of the larger stream and can be concentrated along the near-shore for some distance. In order to determine the influence of Mongaup tributary flows, more data across the width of the stream is needed to determine when these deflected flows fully mix with the overall flow in the Delaware River. The NPS has noted that downstream mixing appears to occur over longer distances downstream than the proposed monitoring locations would measure.

Eagle Creek should record river temperature data in the Delaware River across a transect at each location that would include river left, center, and right monitoring locations. This would result in a total of 12 temperature monitors across four locations. The NPS has provided a figure that indicates their recommended locations for monitoring the zone of thermal mixing in the Delaware River based on their experience in the river (Appendix A). The upstream location should be placed further upstream from the Mongaup River, as indicated, to limit any potential influence of Mongaup River flows. The downstream locations should be located, as indicated, generally below rapids, as these are the river segments with the greatest potential for mixing. The furthest downstream location is intended to represent a distance after which most of the thermal mixing may have occurred. As this study is intended to evaluate the mixing zone, this lower monitoring site may show that the mixing zone extends further downstream. The Service will evaluate the data in the Initial Study Report and may make further study recommendations for locations downstream, if the data suggest that a more extensive zone of mixing exists.

* * * * *

The Service appreciates the opportunity to comment on the eel survey and Delaware River temperature monitoring study. If you have any questions or desire additional information, please contact John Wiley at 607-753-9334.

Sincerely,

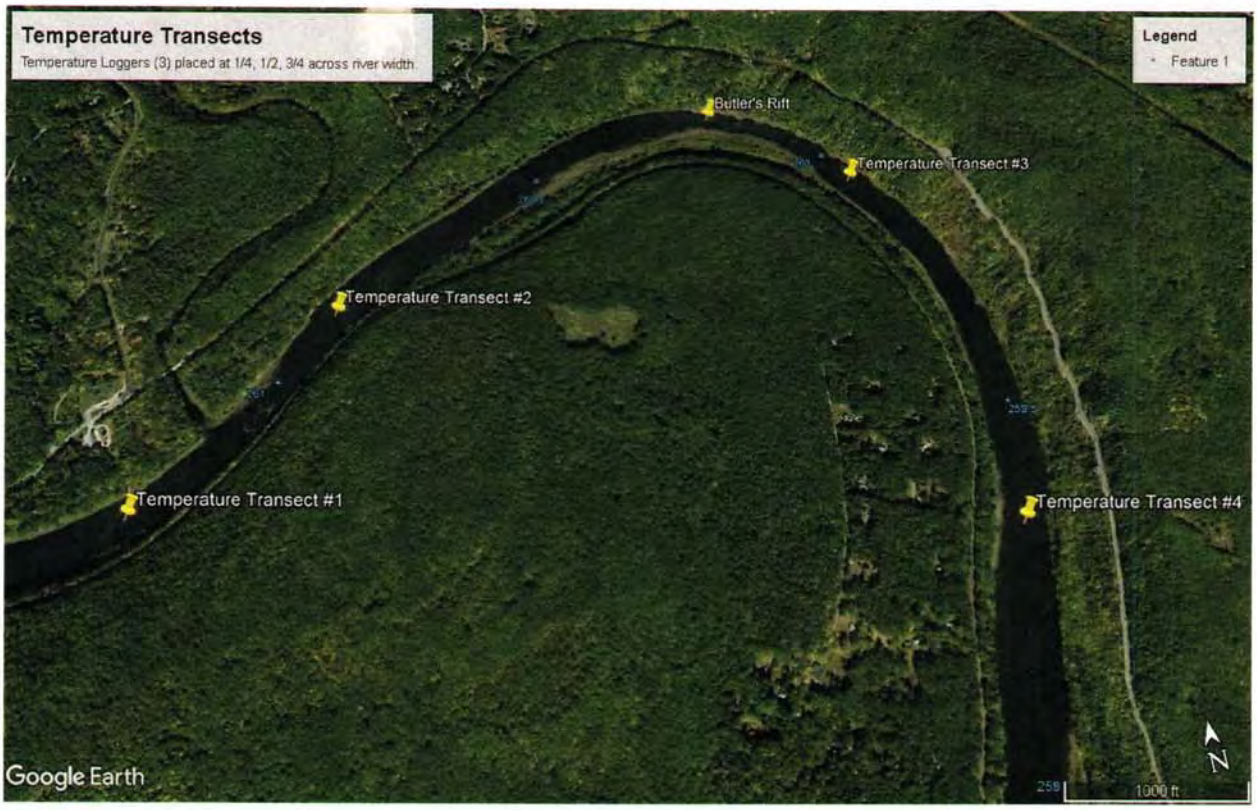
David A. Stilwell

David A. Stilwell
Field Supervisor

cc: HDR, Syracuse, NY (J. Gibson)
TU, Plattsburgh, NY (W. Wellman)
NYSDEC, New Paltz, NY (J. Murray, M. Flaherty)
NPS, Boston, MA (K. Mendik)
NPS, Beach Lake, PA (D. Hamilton, J. Newbern)
DOI, SOL, Newton, MA (L. Tyhach)

Appendix A

Recommended Delaware River Temperature Monitoring Transect Locations



May 16, 2018

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National Park Service
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Subject: **Swinging Bridge Hydroelectric Project (FERC No. 10482-117)**
Mongaup Falls Hydroelectric Project (FERC No. 10481-067)
Rio Hydroelectric Project (FERC No. 9690-112)
Request for Data in Support of Relicensing Studies

Dear Addressees:

Eagle Creek Hydro Power, LLC, Eagle Creek Water Resources, LLC, and Eagle Creek Land Resources, LLC (collectively "Eagle Creek") herein submits this request for information in support of performing the Federal Energy Regulatory Commission (FERC or Commission)-required studies in support of the FERC relicensing of the Swinging Bridge, Mongaup Falls, and Rio Hydroelectric Projects (collectively "Mongaup River Projects"). The Mongaup River Projects are located on Black Lake Creek, the Mongaup River, and Black Brook in Sullivan and Orange Counties, New York.

On January 10, 2018, Eagle Creek filed with the Commission the Revised Study Plan (RSP) for the Mongaup River Projects. On February 9, 2018, the Commission issued the Study Plan Determination (SPD) approving and modifying the studies proposed in the RSP by Eagle Creek.

A total of 16 studies are required by the Commission's SPD, including a Special-Status Species Survey Study, a Bald Eagle Management Study, Fisheries Survey Study, and Alewife Study. In order to perform these studies consistent with the approve methodologies, Eagle Creek requests additional data as outlined below.

Special-Status Species Information

In 2016, in support of the initial stages of the relicensing process, Eagle Creek requested information from the U.S. Fish and Wildlife Service (USFWS) and New York Department of Environmental Conservation (NYSDEC) regarding federal and state-listed rare, threatened, and endangered species;

critical habitat; sensitive natural communities; and species of special concern within the vicinity of the Projects.

Correspondence received from the USFWS and NYSDEC identified federal and state-listed species as well as species of conservation concern that may occur in the general vicinity of the Projects. A summary of the response is provided below. Copies of the correspondence received from the USFWS and NYSDEC are provided as an attachment to this letter as reference.

Based on the approved study methodologies and the consultation to date, and as indicated by the footnotes in the table, Eagle Creek will be evaluating select species through separate study methodologies (e.g., bald eagle, mussel, and fish surveys) or do not anticipate performing field surveys for select species (e.g., Indiana and northern long-eared bat) given that the species will be addressed through the development of a management plan, or due to the lack of identified habitat within the area of interest (e.g., habitat is limited to downstream).

List of Special-Status Species That May Occur in the General Vicinity of the Projects

Species		Federal Status	State Status	NY Natural Heritage Conservation Status
Common Name	**Latin Name**			
Bog turtle[1]	*Glyptemys muhlenbergii*	Threatened		
Small whorled pogonia[1]	*Isotria medeoloides*	Threatened		
Dwarf wedgemussel[2]	*Alasmidonta heterodon*	Endangered		
Indiana bat[3]	*Myotis sodalis*	Endangered		
Northern long-eared bat[3]	*Myotis septentrionalis*	Threatened	Threatened	
Bald eagle[2]	*Haliaeetus leucocephalus*		Threatened	
Peregrine falcon[2]	*Falco peregrinus*		Endangered	
Timber rattlesnake[1]	*Crotalus horridus*		Threatened	
Brook floater[2]	*Alasmidonta varicosa*		Threatened	
Riverbank quillwort[4]	*Isoetes riparia*		Endangered	Critically Imperiled
Dwarf sand-cherry[4]	*Prunus pumila var. depressa*		Threatened	Imperiled
Swamp buttercup[1]	*Ranunculus hispidus var. nitidus*		Endangered	Critically Imperiled
Delaware River clubtail[4]	*Gomphus septima delawarensis*		Special Concern	Critically Imperiled
Southern pygmy clubtail[4]	*Lanthus vernalis*			Critically Imperiled
Green-faced clubtail[4]	*Gomphus viridifrons*			Critically Imperiled
Spine-crowned clubtail[4]	*Gomphus abbreviatus*			Critically Imperiled
Rapids clubtail[4]	*Gomphus quadricolor*			Vulnerable
Alewife floater[2, 4]	*Anodonta implicata*			Critically Imperiled
Blacknose shiner[2]	*Notropis heterolepis*			Imperiled

[1]Species with potential occurrence or habitat in the Project area.
[2]Surveys performed as part of other relicensing studies (i.e., Mussel Survey, Fish Survey, or Bald Eagle Survey).
[3]Species survey not required.
[4]Species survey not required or species not located in the Project area.

Pursuant to the approved methodology of the Commission-required Special-Status Species Survey Study, Eagle Creek herein requests that the USFWS and NYSDEC confirm the current list of special-

status wildlife and plants that may occur in the vicinity of the Projects. Additionally, Eagle Creek requests that the USFWS and NYSDEC provide records of occurrence for the species in the Project areas, as shown on the attached maps. The requested information is needed to guide the geographic spatial scale and specific locations of the field surveys for each species, as further described below.

Consistent with the approved study, Eagle Creek will develop maps to display the boundaries of the Projects and the records of special-status species occurrence. Subsequent to mapping the records of species occurrence, Eagle Creek will perform a desk-top evaluation to identify the species-specific habitats within the Projects' boundaries, which will be incorporated into the species occurrence maps.

For those species that have records of occurrence and/or species-specific habitat areas within the Projects' boundaries where Project operations or formal recreation areas will affect the species, survey grids will be overlaid on the identified areas and habitats and sampling plots will be randomly selected to determine the areas where field surveys will be performed. Prior to performing the field surveys, the necessary state and/or federal collection permit(s) will be obtained.

Bald Eagle Information

In addition to the Special-Status Species Survey Study, Eagle Creek is required to perform a Bald Eagle Study. The study requires Eagle Creek to obtain existing information on bald eagles from applicable federal and state agencies including the National Park Service (NPS), USFWS, and NYSDEC.

Pursuant to the approved methodology, Eagle Creek herein requests that the NPS, USFWS and NYSDEC provide existing information related to bald eagles in the vicinity of the Projects including, but not limited to, the following:

- GIS database indicating nest locations and nest status;
- Location of winter roost sites;
- NYSDEC Regional 3 Breeding Summary Reports (since 2010); and
- Other relevant information related to bald eagles in the vicinity of the Projects.

As indicated in the RSP, the 2015 New York State Bald Eagle Conservation Plan indicates that the NYSDEC is to maintain their lists of known nest sites, periodically census all nests on the list, and monitor bald eagle nesting populations at 5-year intervals. Specifically, the Conservation Plan indicates that annual monitoring of known nests will continue through the 2016 breeding season and a population monitoring plan will be developed and implemented beginning in 2017. Eagle Creek herein requests the aforementioned information from the NYSDEC in support of the required Bald Eagle Study.

The requested information will be used in support of the field surveys to document and map overnight roost sites occupied by bald eagles wintering at the Projects as well as to identify the location and status of nest sites at the Projects. Prior to performing the field surveys, the necessary state and/or federal collection permit(s) will be obtained.

Fisheries Information

In support of the Fisheries Survey Study, the SPD requires Eagle Creek to further discuss the existing fisheries data, and explain how the existing information is adequate to satisfy the study goals and objectives and articulate the data gaps the proposed study is intended to fill.

In support of the Alewife Study, the SPD requires Eagle Creek to further discuss the existing fisheries data, including those described in Appendix C of the RSP, and develop an alewife-specific study report that summarizes the data for each reservoir and describes the relative abundance, habitat use, seasonal proximity to project intakes, and population trends.

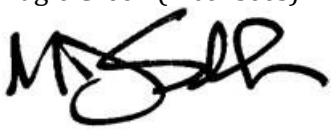
The information included in Appendix C of the RSP represents the data provided to Eagle Creek by the NYSDEC via email dated November 15, 2017. As indicated in the NYSDEC email, the data provided included a spreadsheet listing all the surveys conducted by NYSDEC Fisheries in the Projects' watershed since 1990, as well as several surveys from 1988 and 1989 depicting the DEC Survey Number, Survey Purpose, Date, and Gear Type as well as the number of fish of each species collected at each site for each of the surveys. The NYSDEC indicated that complete survey information could be provided for any of these surveys. Therefore, in order to obtain the information needed to support the Fisheries Survey Study and Alewife Study, Eagle Creek requests that the NYSDEC provide additional supporting information for the fisheries surveys performed since 1988.

Eagle Creek also requests that the NYSDEC provide the specific species and life stages for which the NYSDEC has written management goals for the stream reaches and impoundments associated with the projects. This information will be used in support of the required aquatic studies and eventual development of the license application.

In support of these requests, Eagle Creek requests to meet with staff at NYSDEC's New Paltz office to review and discuss the available data. We would be happy to schedule a call within the next week to discuss the data needs and how the data can be obtained. Given the approved study methodologies and timing of the field studies, we believe it is important to conduct this call and follow up meeting within the next couple of weeks.

If there are any questions regarding the information provided herein, please do not hesitate to contact Michael Scarzello with Eagle Creek at (973) 998-8400 or Jim Gibson with HDR at (315) 414-2202.

Sincerely,
Eagle Creek (Licensees)

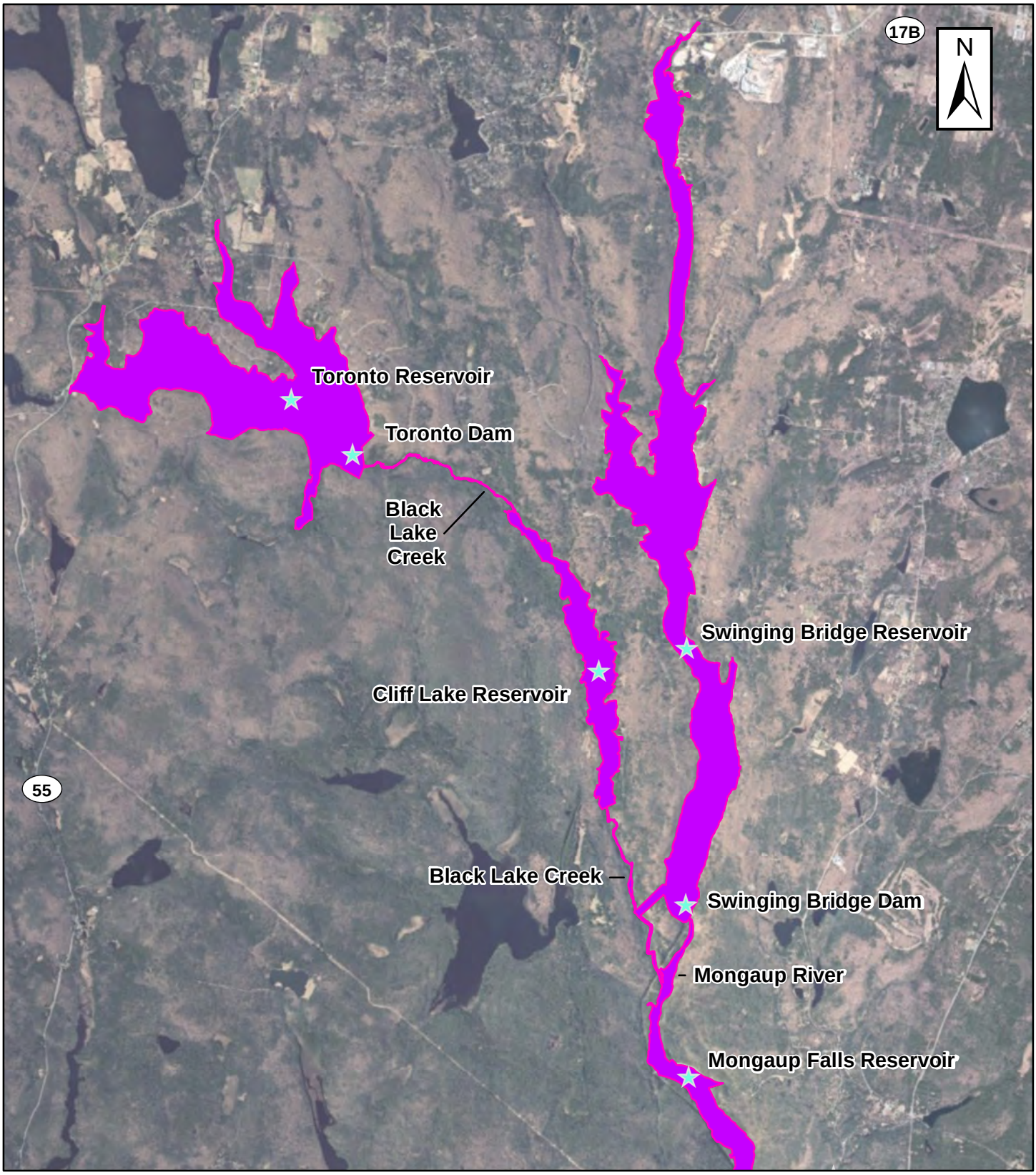


Mr. Michael Scarzello

Attachments

cc: Honorable Kimberly D. Bose (FERC)

MAP OF PROJECT AREA



Legend

Project Area

0 1 Miles

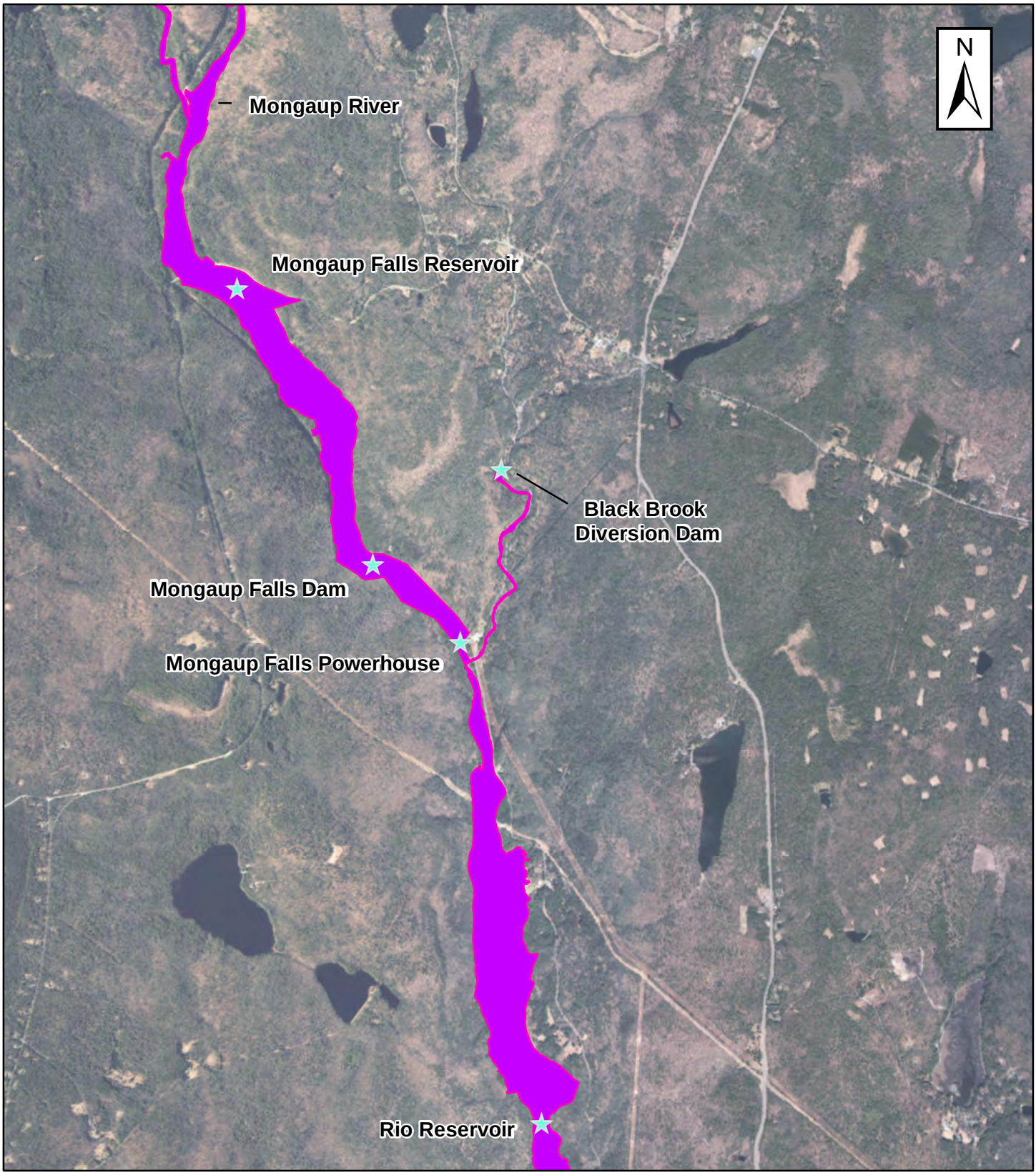
Swinging Bridge Hydroelectric Project
(FERC No.10482)

Mongaup Falls Hydroelectric Project
(FERC No. 10481)

Rio Hydroelectric Project
(FERC No. 9690)

GENERAL LOCATION MAP

SULLIVAN & ORANGE COUNTIES, NEW YORK



Legend

Project Area

0 1 Miles

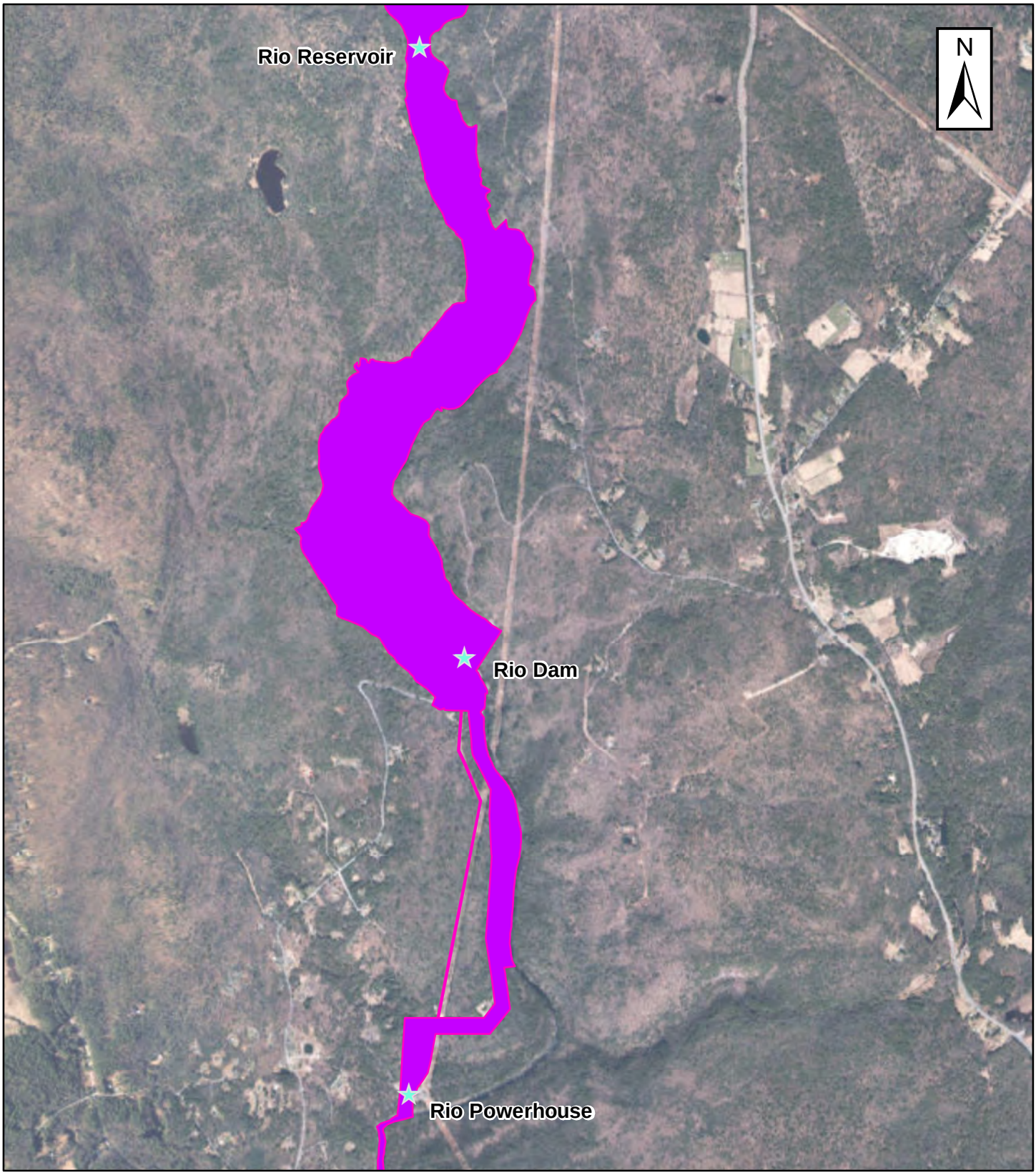
Swinging Bridge Hydroelectric Project
(FERC No.10482)

Mongaup Falls Hydroelectric Project
(FERC No. 10481)

Rio Hydroelectric Project
(FERC No. 9690)

GENERAL LOCATION MAP

SULLIVAN & ORANGE COUNTIES, NEW YORK



Legend

Project Area

0 0.5 Miles

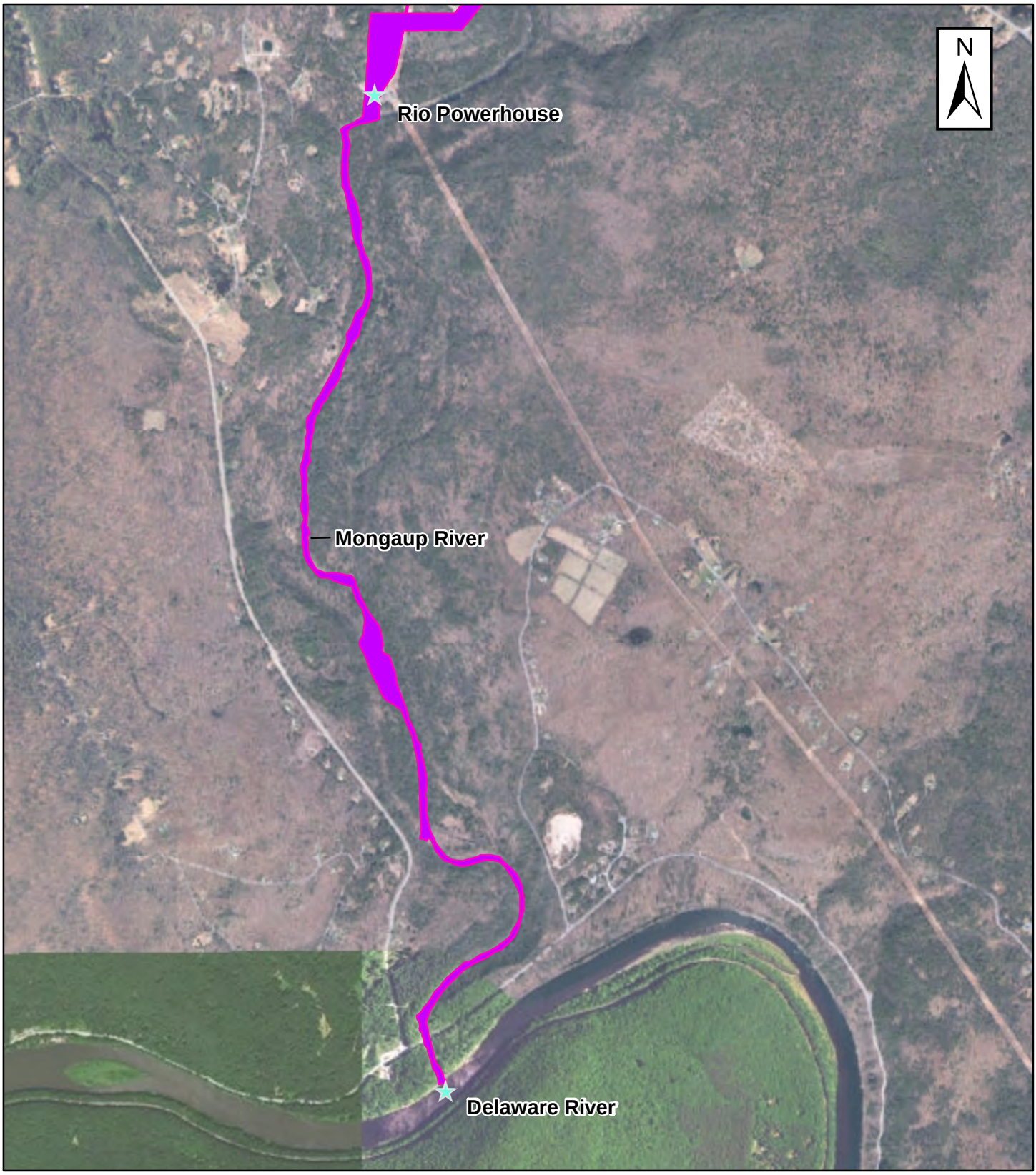
Swinging Bridge Hydroelectric Project
(FERC No.10482)

Mongaup Falls Hydroelectric Project
(FERC No. 10481)

Rio Hydroelectric Project
(FERC No. 9690)

GENERAL LOCATION MAP

SULLIVAN & ORANGE COUNTIES, NEW YORK



Legend

Project Area

0 0.5 Miles

Page 4 of 4

Swinging Bridge Hydroelectric Project
(FERC No.10482)

Mongaup Falls Hydroelectric Project
(FERC No. 10481)

Rio Hydroelectric Project
(FERC No. 9690)

GENERAL LOCATION MAP

SULLIVAN & ORANGE COUNTIES, NEW YORK

PREVIOUS CORRESPONDENCE

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
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625 Broadway, 5th Floor, Albany, New York 12233-4757
Phone: (518) 402-8935 • **Fax:** (518) 402-8925
Website: www.dec.ny.gov

February 16, 2017

Jim Gibson
HDR
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Syracuse, NY 13212

Re: Relicensing of Swinging Bridge (FERC No. 10482), Mongaup Falls (10481), and Rio (9690) Hydroelectric Projects
County: Sullivan Town/City: Bethel, Deerpark, Forestburgh, Highland, Lumberland, Thompson

Dear Mr. Gibson:

In response to your recent request, we have reviewed the New York Natural Heritage Program database with respect to the above hydroelectric projects.

Enclosed is a report of rare or state-listed animals and plants, and significant natural communities that our database indicates occur at the project sites or in their immediate vicinity.

For most sites, comprehensive field surveys have not been conducted; the enclosed report only includes records from our database. We cannot provide a definitive statement as to the presence or absence of all rare or state-listed species or significant natural communities. Depending on the nature of the project and the conditions at the project site, further information from on-site surveys or other sources may be required to fully assess impacts on biological resources.

Our database is continually growing as records are added and updated. If this proposed project is still under development one year from now, we recommend that you contact us again so that we may update this response with the most current information.

The presence of the plants and animals identified in the enclosed report may result in this project requiring additional review or permit conditions. For further guidance, and for information regarding other permits that may be required under state law for regulated areas or activities (e.g., regulated wetlands), please contact the NYS DEC Region 3 Office, Division of Environmental Permits, as listed at www.dec.ny.gov/about/39381.html.

Sincerely,

Nicholas Conrad
Information Resources Coordinator
New York Natural Heritage Program

The following state-listed animals have been documented in the area of interest of the Swinging Bridge, Mongaup Falls, and Rio Hydroelectric Projects.

The following list includes animals that are listed by NYS as Endangered, Threatened, or Special Concern; and/or that are federally listed or are candidates for federal listing.

For information about any permit considerations for the project, please contact the Permits staff at the NYSDEC Region 3 Office at dep.r3@dec.ny.gov, (845) 256-3054. For information about potential impacts of the project on these species, and how to avoid, minimize, or mitigate any impacts, contact the Region 3 Wildlife staff at Wildlife.R3@dec.ny.gov, (845) 256-3098.

COMMON NAME	*SCIENTIFIC NAME*	*NY STATE LISTING*	*FEDERAL LISTING*	
Birds				
Bald Eagle *Nesting and wintering*	*Haliaeetus leucocephalus*	Threatened		14579

Bald eagles have been documented nesting on Mongaup Falls Reservoir, Swinging Bridge Reservoir, Rio Reservoir, Toronto Reservoir, Lebanon Lake, Cliff Lake, and other lakes and rivers within the area of interest.

Bald eagles have been documented wintering along the length of the Mongaup River and the Delaware River.

Peregrine Falcon *Nesting*	*Falco peregrinus*	Endangered		14580

Peregrine falcons have been documented nesting along the Delaware River within the area of interest.

Reptiles				
Timber Rattlesnake *hibernacula, gestating areas, basking areas, foraging areas*	*Crotalus horridus*	Threatened		14602

Timber rattlesnakes have been documented near Rio Reservoir and at several other locations throughout the area of interest.

Freshwater Mussels				
Brook Floater	*Alasmidonta varicosa*	Threatened		11125

Brook floaters have been documented in the Delaware River within the area of interest.

This report only includes records from the NY Natural Heritage database. For most sites, comprehensive field surveys have not been conducted, and we cannot provide a definitive statement as to the presence or absence of all rare or state-listed species. Depending on the nature of the project and the conditions at the project site, further information from on-site surveys or other sources may be required to fully assess impacts on biological resources.

The following rare plants, rare animals, and significant natural communities have been documented in the area of interest of the Swinging Bridge, Mongaup Falls, and Rio Hydroelectric Projects.

We recommend that potential onsite and offsite impacts of the proposed project on these species or communities be addressed as part of any environmental assessment or review conducted as part of the planning, permitting and approval process. Field surveys of the project site may be necessary to determine the status of a species at the site, particularly for sites that are currently undeveloped and may still contain suitable habitat. Final requirements of the project to avoid, minimize, or mitigate potential impacts are determined by the lead permitting agency or the government body approving the project.

The following animals, while not listed by New York State as Endangered or Threatened, are of conservation concern to the state, and are considered rare by the New York Natural Heritage Program.

COMMON NAME	*SCIENTIFIC NAME*	*NY STATE LISTING*	*HERITAGE CONSERVATION STATUS*
Fish			
Blacknose Shiner	*Notropis heterolepis*	Unlisted	Imperiled in NYS
Toronto Reservoir, 2009-06-04			14876
Dragonflies and Damselflies			
Delaware River Clubtail	*Gomphus septima delawarensis*	Special Concern	Critically Imperiled in NYS and Globally Rare
Delaware River, 2015-06-04.			12082
Southern Pygmy Clubtail	*Lanthus vernalis*	Unlisted	Critically Imperiled in NYS
Mongaup River near mouth, and Delaware River, 1994-06-13.			14689
Green-faced Clubtail	*Gomphus viridifrons*	Unlisted	Critically Imperiled in NYS
Delaware River, 2015-06-04.			6761
Spine-crowned Clubtail	*Gomphus abbreviatus*	Unlisted	Critically Imperiled in NYS
Delaware River, 2015-06-11.			9921
Rapids Clubtail	*Gomphus quadricolor*	Unlisted	Vulnerable in NYS
Mongaup River near mouth, and Delaware River, 1994-06-13.			4080
Freshwater Mussels			
Alewife Floater	*Anodonta implicata*	Unlisted	Critically Imperiled in NYS
Delaware River, 2002-09-16.			11121

The following plants are listed as Endangered or Threatened by New York State, and/or are considered rare by the New York Natural Heritage Program, and so are a vulnerable natural resource of conservation concern.

COMMON NAME	*SCIENTIFIC NAME*	*NY STATE LISTING*	*HERITAGE CONSERVATION STATUS*
Vascular Plants			
Swamp Buttercup	*Ranunculus hispidus* var. *nitidus*	Endangered	Critically Imperiled in NYS

Mongaup Falls Reservoir, 1992-06-07: The plants are at the edge of a shallow emergent marsh at the north end of the Mongaup Falls Reservoir, on a mucky flat just southeast of the Forestburgh Road bridge across the Mongaup River. The marsh contains a variety of sedges, bulrushes, rushes, iris, and St. Johnsworts. 8840

Dwarf Sand-cherry	*Prunus pumila* var. *depressa*	Threatened	Imperiled in NYS

Cherry Island, 1997-07-29: Plants occur throughout a small patch of riverside ice meadow on a sand/cobble island in the upper Delaware River. 5076

Dwarf Sand-cherry	*Prunus pumila var. depressa*	Threatened	Imperiled in NYS

Hawks Nest, along Delaware River, 1985-09-12: Riverside bedrock outcrop (sandstone) with some wet seep areas. 5733

Riverbank Quillwort	*Isoetes riparia*	Endangered	Critically Imperiled in NYS

Mongaup River Delta, 1992-10-20: The Mongaup River delta extends for approximately one mile along the Delaware River. A well-developed floodplain forest has formed on the alluvial sandy silt and is characterized by large, old river birch (*Betula nigra*), silver maple (*Acer saccharinum*), sycamore (*Platanus occidentalis*), and white pine (*Pinus strobus*) with an understory of grasses and scattered shrubs. The floodplain forest grades into a cobble shore at the river. Purple loosestrife is common along the edge of the water. 6506

If any rare plants or animals are documented during site visits, we request that information on the observations be provided to the New York Natural Heritage Program so that we may update our database.

Information about many of the rare animals and plants in New York, including habitat, biology, identification, conservation, and management, are available online in Natural Heritage's Conservation Guides at www.guides.nynhp.org, from NatureServe Explorer at www.natureserve.org/explorer, and from USDA's Plants Database at http://plants.usda.gov/index.html (for plants).

The following significant natural communities are considered significant from a statewide perspective by the NY Natural Heritage Program. They are either occurrences of a community type that is rare in the state, or a high quality example of a more common community type. By meeting specific, documented criteria, the NY Natural Heritage Program considers these community occurrences to have high ecological and conservation value.

COMMON NAME	*SCIENTIFIC NAME*	*NY STATE LISTING*	*HERITAGE CONSERVATION STATUS*

Wetland/Aquatic Communities

Floodplain Forest — High Quality Occurrence of Rare Community Type

Mongaup River Delta: Moderate size, good condition, some disturbance.A well-developed floodplain forest has formed on the alluvial sandy silt and is characterized by large, old river birch (*Betula nigra*), silver maple (*Acer saccharinum*), sycamore (*Platanus occidentalis*), and white pine (*Pinus strobus*) with an understory of grasses and scattered shrubs. The floodplain forest grades into a cobble shore at the river. Purple loosestrife is common along the edge of the water. 1075

Floodplain Forest — Rare Community Type

Knights Eddy, along Delaware River: Small area. 2395

Perched Bog — High Quality Occurrence of Rare Community Type

Lebanon Road Wetlands,between Mongaup Falls Reservoir and Lebanon Lake: Moderate size bog in pristine condition. 7009

Upland/Terrestrial Communities

Shoreline Outcrop — High Quality Occurrence of Uncommon Community Type

Hawks Nest, along Delaware River: This is an undisturbed site with fairly good species composition. 4144

Pitch Pine-Oak-Heath Woodland — High Quality Occurrence of Rare Community Type

Buck Knoll, about .5 mile east of the Rio Powerhouse: Small but mature woodland in good condition. 6325

Floodplain Grassland — High Quality Occurrence of Uncommon Community Type

Cherry Island: This is a good sized occurrence in a good landscape, purple loostrife invading wetter areas. 9095

Information about many of the natural community types in New York, including identification, dominant and characteristic vegetation, distribution, conservation, and management, is available online in Natural Heritage's Conservation Guides at www.guides.nynhp.org. For descriptions of all community types, go to www.dec.ny.gov/animals/97703.html for Ecological Communities of New York State.

This report only includes records from the NY Natural Heritage database. For most sites, comprehensive field surveys have not been conducted, and we cannot provide a definitive statement as to the presence or absence of all rare or state-listed species. Depending on the nature of the project and the conditions at the project site, further information from on-site surveys or other sources may be required to fully assess impacts on biological resources.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
New York Ecological Services Field Office
3817 LUKER ROAD
CORTLAND, NY 13045
PHONE: (607)753-9334 FAX: (607)753-9699
URL: www.fws.gov/northeast/nyfo/es/section7.htm

Consultation Code: 05E1NY00-2017-SLI-0180 October 28, 2016
Event Code: 05E1NY00-2017-E-00491
Project Name: Swinging Bridge, Mongaup Falls, and Rio Hydroelectric Projects

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

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 *et seq.*). This list can also be used to determine whether listed species may be present for projects without federal agency involvement. New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list.

Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the ESA, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC site at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list. If listed, proposed, or candidate species were identified as potentially occurring in the project area, coordination with our office is encouraged. Information on the steps involved with assessing potential impacts from projects can be found at: http://www.fws.gov/northeast/nyfo/es/section7.htm

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (

http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the Services wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

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

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

Attachment

United States Department of Interior
Fish and Wildlife Service

Project name: Swinging Bridge, Mongaup Falls, and Rio Hydroelectric Projects

Official Species List

Provided by:

New York Ecological Services Field Office
3817 LUKER ROAD
CORTLAND, NY 13045
(607) 753-9334
http://www.fws.gov/northeast/nyfo/es/section7.htm

Expect additional Species list documents from the following office(s):

Pennsylvania Ecological Services Field Office
110 RADNOR ROAD SUITE 101
STATE COLLEGE, PA 16801
(814) 234-4090
http://www.fws.gov/northeast/pafo/

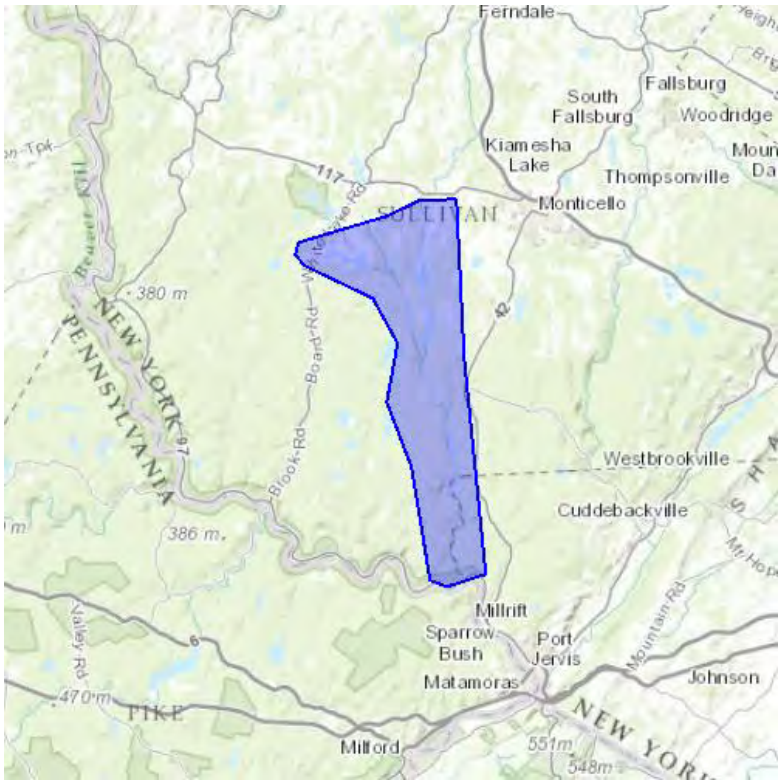
Consultation Code: 05E1NY00-2017-SLI-0180
Event Code: 05E1NY00-2017-E-00491

Project Type: DAM

Project Name: Swinging Bridge, Mongaup Falls, and Rio Hydroelectric Projects
Project Description: Eagle Creek Hydro Power, LLC, Eagle Creek Water Resources, LLC, and Eagle Creek Land Resources, LLC (collectively "Eagle Creek"), will be pursuing new licenses from the Federal Energy Regulatory Commission for the existing Swinging Bridge Hydroelectric Project (FERC No. 10482); Mongaup Falls Hydroelectric Project (FERC No. 10481); and Rio Hydroelectric Project (FERC No. 9690).

Please Note: The FWS office may have modified the Project Name and/or Project Description, so it may be different from what was submitted in your previous request. If the Consultation Code matches, the FWS considers this to be the same project. Contact the office in the 'Provided by' section of your previous Official Species list if you have any questions or concerns.

Project Location Map:



Project Coordinates: MULTIPOLYGON (((-74.75715637207031 41.66393558993828, -74.7509765625 41.56639883501083, -74.73243713378906 41.43243112846178, -74.76402282714844 41.425223482352656, -74.77912902832031 41.42882740542921, -74.79389190673827 41.49880677999686, -74.81380462646484 41.53890792786977, -74.80539321899413 41.57474656194976, -74.82616424560547 41.602607315101025, -74.88212585449219 41.62262881463783, -74.88899230957031 41.62930126680884, -74.88693237304688 41.63725598035979, -74.81414794921875 41.6536755092821, -74.78702545166016 41.66316614058965, -74.75715637207031 41.66393558993828)))

Project Counties: Orange, NY | Sullivan, NY | Pike, PA

Endangered Species Act Species List

There are a total of 5 threatened or endangered species on your species list. Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. Critical habitats listed under the **Has Critical Habitat** column may or may not lie within your project area. See the **Critical habitats within your project area** section further below for critical habitat that lies within your project. Please contact the designated FWS office if you have questions.

Clams	**Status**	**Has Critical Habitat**	**Condition(s)**
Dwarf wedgemussel *(Alasmidonta heterodon)* Population: Wherever found	Endangered		
Flowering Plants			
Small Whorled pogonia *(Isotria medeoloides)* Population: Wherever found	Threatened		
Mammals			
Indiana bat *(Myotis sodalis)* Population: Wherever found	Endangered		
Northern long-eared Bat *(Myotis septentrionalis)* Population: Wherever found	Threatened		
Reptiles			
Bog Turtle *(Clemmys muhlenbergii)* Population: Wherever found, except GA, NC, SC, TN, VA	Threatened		

Critical habitats that lie within your project area

There are no critical habitats within your project area.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Pennsylvania Ecological Services Field Office
110 RADNOR ROAD, SUITE 101
STATE COLLEGE, PA 16801
PHONE: (814)234-4090 FAX: (814)234-0748
URL: www.fws.gov/northeast/pafo/

Consultation Code: 05E2PA00-2017-SLI-0073 October 28, 2016
Event Code: 05E2PA00-2017-E-00477
Project Name: Swinging Bridge, Mongaup Falls, and Rio Hydroelectric Projects

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

To Whom It May Concern:

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

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

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

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

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

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

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

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

Any activity proposed on National Wildlife Refuge lands must undergo a "Compatibility Determination' conducted by the Refuge. Please contact the individual Refuge to discuss any questions or concerns.

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

Attachment

Official Species List

Provided by:

Pennsylvania Ecological Services Field Office
110 RADNOR ROAD SUITE 101
STATE COLLEGE, PA 16801
(814) 234-4090
http://www.fws.gov/northeast/pafo/

Expect additional Species list documents from the following office(s):

New York Ecological Services Field Office
3817 LUKER ROAD
CORTLAND, NY 13045
(607) 753-9334
http://www.fws.gov/northeast/nyfo/es/section7.htm

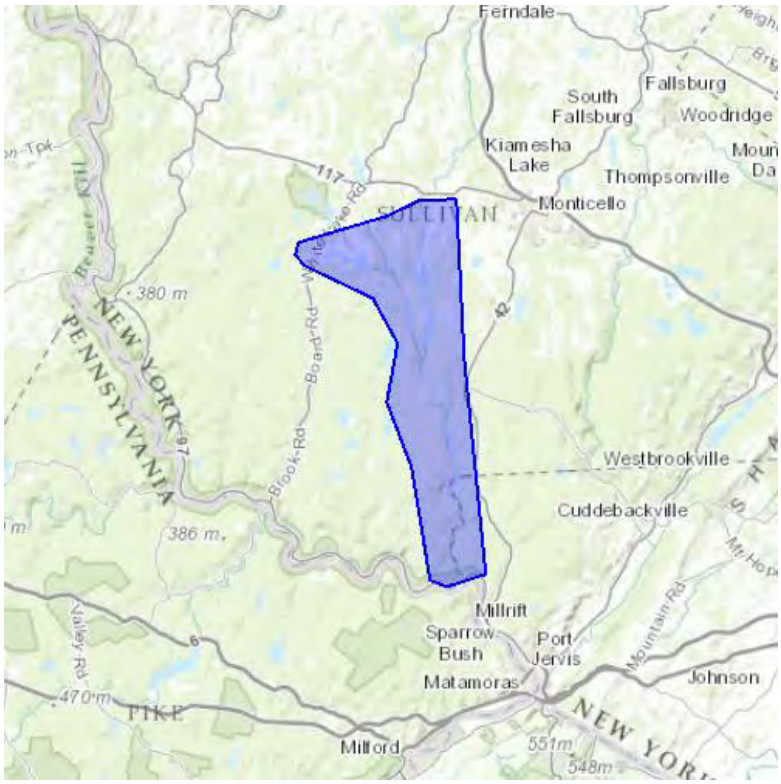
Consultation Code: 05E2PA00-2017-SLI-0073
Event Code: 05E2PA00-2017-E-00477

Project Type: DAM

Project Name: Swinging Bridge, Mongaup Falls, and Rio Hydroelectric Projects
Project Description: Eagle Creek Hydro Power, LLC, Eagle Creek Water Resources, LLC, and Eagle Creek Land Resources, LLC (collectively "Eagle Creek"), will be pursuing new licenses from the Federal Energy Regulatory Commission for the existing Swinging Bridge Hydroelectric Project (FERC No. 10482); Mongaup Falls Hydroelectric Project (FERC No. 10481); and Rio Hydroelectric Project (FERC No. 9690).

Please Note: The FWS office may have modified the Project Name and/or Project Description, so it may be different from what was submitted in your previous request. If the Consultation Code matches, the FWS considers this to be the same project. Contact the office in the 'Provided by' section of your previous Official Species list if you have any questions or concerns.

Project Location Map:



Project Coordinates: MULTIPOLYGON (((-74.75715637207031 41.66393558993828, -74.7509765625 41.56639883501083, -74.73243713378906 41.43243112846178, -74.76402282714844 41.425223482352656, -74.77912902832031 41.42882740542921, -74.79389190673827 41.49880677999686, -74.81380462646484 41.53890792786977, -74.80539321899413 41.57474656194976, -74.82616424560547 41.602607315101025, -74.88212585449219 41.62262881463783, -74.88899230957031 41.62930126680884, -74.88693237304688 41.63725598035979, -74.81414794921875 41.6536755092821, -74.78702545166016 41.66316614058965, -74.75715637207031 41.66393558993828)))

Project Counties: Orange, NY | Sullivan, NY | Pike, PA

Endangered Species Act Species List

There are a total of 3 threatened or endangered species on your species list. Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. Critical habitats listed under the **Has Critical Habitat** column may or may not lie within your project area. See the **Critical habitats within your project area** section further below for critical habitat that lies within your project. Please contact the designated FWS office if you have questions.

Clams	**Status**	**Has Critical Habitat**	**Condition(s)**
Dwarf wedgemussel *(Alasmidonta heterodon)* Population: Wherever found	Endangered		
Mammals			
Indiana bat *(Myotis sodalis)* Population: Wherever found	Endangered		
Northern long-eared Bat *(Myotis septentrionalis)* Population: Wherever found	Threatened		

Critical habitats that lie within your project area

There are no critical habitats within your project area.

Appendix A: FWS National Wildlife Refuges and Fish Hatcheries

There are no refuges or fish hatcheries within your project area.

From:	Matatt, Krista
To:	Russell, Cate; VerWeire, Kevin; Gibson, Jim
Subject:	FW: Request for Threatened and Endangered Species Information
Date:	Friday, June 15, 2018 9:08:37 AM
Attachments:	read_me_NYNHP_HDR_Mongaup_2018.pdf NYNHP_HDR_Mongaup_2018.zip

Good Morning – we received the data from Nick with NHP (see attached and email below).

Please confirm the data is sufficient and I will respond to Nick.

Thanks,

Krista Matatt
D 518.937.9513

hdrinc.com/follow-us

From: Conrad, Nick (DEC) [mailto:nick.conrad@dec.ny.gov]
Sent: Thursday, June 14, 2018 2:47 PM
To: Matatt, Krista; Gibson, Jim
Subject: RE: Request for Threatened and Endangered Species Information

Krista and Jim,
Thank you for the signed agreement. Attached to this email is a zipfile with one shapefile.

New York Natural Heritage provides these GIS data to HDR under the auspices of the data agreement signed in 2018. We ask that any HDR staff accessing or using the GIS data read the agreement and be familiar with its provisions, especially the provision that the data is for the internal use of HDR and should not be distributed externally, nor should any maps or documents revealing the precise locations of rare species be made available to the public or other parties.

The following information is also in the attached read_me document.

The shapefile contains the locations of rare plants and animals and of significant natural communities which are documented in the New York Natural Heritage database in or close to Eagle Creek Hydro Power's Mongaup River hydroelectric projects as shown on maps provided by HDR. In the shapefiles, each location of a species or community is represented as one or more polygons. The accompanying documentation, **NYNHP_docgis_18c.pdf**, has details on interpreting these shapes, and definitions of the attributes. The shapefile is in meters, UTM zone 18, NAD 83.

The shapefile contains records of occurrences of

- rare animals and rare plants last documented since 1990, and for which the locations are precisely or relatively precisely known, and for which the identification has been confirmed.
- significant natural communities.

Natural community occurrences in this shapefile are considered significant from a statewide perspective, by virtue of being of excellent or good quality, and/or of a rare community type. NY Natural Heritage considers these occurrences to have high ecological and conservation value.

This shapefile contains documented locations of rare species and significant ecological communities. The lack of any records at a particular location does not necessarily mean that no rare species or significant community is present there.

Information about many of the rare and listed animals and plants in New York, including biology, identification, habitat, conservation, and management, are available online in Natural Heritage's Conservation Guides at www.guides.nynhp.org.

Information about many of the natural community types in New York, including identification, dominant and characteristic vegetation, distribution, conservation, and management, is available online in Natural Heritage's Conservation Guides at www.guides.nynhp.org. More technical descriptions are in Ecological Communities of New York State at http://www.dec.ny.gov/animals/97703.html.

Please confirm that you have received the data, and let me know if you have any questions.

Nick

Nicholas Conrad
Information Resources Coordinator
New York Natural Heritage Program
SUNY College of Environmental Science and Forestry
In partnership with NYS Department of Environmental Conservation
625 Broadway
Albany, NY 12233-4757
(518) 402-8944
Nick.Conrad@dec.ny.gov
www.nynhp.org

From: Matatt, Krista [mailto:Krista.Matatt@hdrinc.com]
Sent: Friday, June 08, 2018 12:33 PM
To: Gibson, Jim <Jim.Gibson@hdrinc.com>; Conrad, Nick (DEC) <nick.conrad@dec.ny.gov>
Subject: RE: Request for Threatened and Endangered Species Information

Hi Nick – to answer your questions:

- At some point, we will provide Eagle Creek with the rare species location information in support of report reviews and/or planning activities. The appropriate Eagle Creek contact to sign the NHP data agreement is Michael Scarzello. His email is: Michael.Scarzello@eaglecreekre.com

- Also, we will need information on all the species, beyond what was provided in the HDR 2017 report, in order to address the requirements of the required studies.

If you have any other questions, please feel free to contact me or Jim.

Thank you,

Krista Matatt
D 518.937.9513

hdrinc.com/follow-us

From: Gibson, Jim
Sent: Friday, June 08, 2018 10:57 AM
To: Conrad, Nick (DEC); Matatt, Krista
Subject: RE: Request for Threatened and Endangered Species Information

Nick,

Thank you for the quick response to this request.

The attached agreement has been signed in support of sharing the requested information.

Please do not hesitate to contact Krista or myself if there are any questions regarding the request or the FERC relicensing process.

Thanks and have a great weekend.

Jim Gibson, MPA, MSES
Vice President

HDR
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Syracuse, NY 13212
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From: Conrad, Nick (DEC) [mailto:nick.conrad@dec.ny.gov]
Sent: Friday, June 8, 2018 10:48 AM
To: Matatt, Krista <Krista.Matatt@hdrinc.com>
Cc: Gibson, Jim <Jim.Gibson@hdrinc.com>
Subject: RE: Request for Threatened and Endangered Species Information

Hello, Krista,
New York Natural Heritage has received your letter of May 16. Our standard response time for standard project screenings is two to three weeks; more involved requests, such as this one which is requesting GIS data, may take longer.

As you know, data on the on the precise locations of rare plants and animals is sensitive, and so we ask that recipients agree to a data agreement as part of receiving GIS data from New York Natural Heritage. The agreement offers guidance on how to use the data while accommodating its sensitive nature. I've attached a draft agreement. The most important provisions are that the data will be for

HDR's internal use only, and the data are not to be passed on to any other party; and no maps or documents revealing the precise locations of rare species will be published or made available to the public. If you have concerns or questions about any of the provisions, let me know. If the provisions are acceptable to you, please send or e-mail me a signed copy of the agreement.

Is HDR planning to use the data only internally to help plan your surveys and prepare a report for Eagle Creek, or are you also planning of providing Eagle Creek with data and/or maps of rare species locations? If the latter, we will also need to execute a data agreement with Eagle Creek, and I will need an email contact for them.

Thank you for the offer of a shapefile of the project area. We will be able to prepare the data from our own maps, so a shapefile from you won't be necessary.

Your letter explicitly requests locations of bald eagle nests. Are you also requesting locations for other rare and listed plants and animals within the project area, beyond what was provided in our report to HDR in 2017?

Sincerely,
Nick

Nicholas Conrad
Information Resources Coordinator
New York Natural Heritage Program
SUNY College of Environmental Science and Forestry
In partnership with NYS Department of Environmental Conservation
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From: Matatt, Krista [mailto:Krista.Matatt@hdrinc.com]
Sent: Friday, June 08, 2018 9:56 AM
To: Conrad, Nick (DEC) <nick.conrad@dec.ny.gov>
Cc: Kevin.VerWeire@hdrinc.com; Russell, Cate <Cate.Russell@hdrinc.com>; Gibson, Jim <Jim.Gibson@hdrinc.com>
Subject: Request for Threatened and Endangered Species Information

Good Morning,

On behalf of Eagle Creek Hydro Power, LLC, Eagle Creek Water Resources, LLC, and Eagle Creek Land Resources, LLC, HDR prepared and sent out requests for: federal and state-listed rare, threatened, and endangered species; critical habitats; sensitive natural communities; and species of special concern for the Swinging Bridge Hydroelectric Project, Mongaup Falls Hydroelectric Project, and Rio Hydroelectric Project (collectively "Mongaup River Projects"). The Mongaup River Projects are located on Black Lake Creek, the Mongaup River, and Black Brook in Sullivan and Orange Counties, New York.

An initial data request was mailed out to the New York Natural Heritage Program on December 2, 2016 and processed on February 16, 2017. A second data request was mailed out on May 16, 2018 and is attached for reference. We have not received correspondence relating to this request from the New York Natural Heritage Program to date.

Per the attached email correspondence, Nathan Ermer, Wildlife Biologist with the NYSDEC, indicated you were the appropriate contact with the New York Natural Heritage Program for obtaining location data for New York State wildlife species of interest. We would like to setup a data sharing agreement so that we can get more focused species information to support planning of habitat assessments and species survey locations. The attached map shows the area of interest for which the information is being requested. We can provide the area of interest in shapefile format should you need it.

Please feel free to contact me via email or phone (below) if you have any questions.

Thank you,

Krista Matatt
Environmental Scientist

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United States Department of the Interior
FISH AND WILDLIFE SERVICE
3817 Luker Road
Cortland, New York 13045

June 26, 2018

Mr. Michael Scarzello
Eagle Creek Renewable Energy, LLC
PO Box 167
Neshkoro, WI 54960-0167

RE: Rio Hydroelectric Project (FERC No. P-9690-112)
Mongaup Falls Hydroelectric Project (FERC No. P-10481-067)
Swinging Bridge Hydroelectric Project (FERC No. P-10482-117)
Response to Request for Data in Support of Relicensing Studies

Dear Mr. Scarzello:

The U.S. Fish and Wildlife Service (Service) has reviewed the May 16, 2018, letter by Eagle Creek Hydro Power, LLC, Eagle Creek Water Resources, LLC, and Eagle Creek Land Resources, LLC, (Eagle Creek) requesting additional information regarding the: 1) special-status species surveys; 2) occurrences of bald eagles (*Haliaeetus leucocephalus*); and 3) fisheries studies to be performed during the relicensing of the Rio (FERC No. 9690-112), Mongaup Falls (FERC No. 10481-067), and Swinging Bridge Hydroelectric Projects (FERC No. 10482-117). The three projects, collectively known as the Mongaup River Hydroelectric Projects (Project or Projects), are located on the Mongaup River, Black Lake Creek, and Black Brook in Sullivan and Orange Counties, New York. The Service participated in a May 31, 2018, call with Eagle Creek, the New York State Department of Environmental Conservation (NYSDEC), and the National Park Service (NPS) to further discuss this request.

Special-status Species Surveys

Eagle Creek has provided a table in its May 16, 2018, letter of the special-status species (Special Status Species Table) that may occur in the general vicinity of the Projects and a proposal for survey effort and methodologies based on the current Study Plan Determination (SPD) issued by the Federal Energy Regulatory Commission (FERC), currently available information, and proposed Protection Enhancement and Mitigation (PME) measures. Eagle Creek has requested that the Service confirm that the species listed are accurate and proposed survey effort and methodologies are sufficient. Additionally, Eagle Creek has requested that the Service provide additional occurrence information to guide the geographic scope of any needed surveys. The Service is providing comments for species under our jurisdiction protected by the Endangered Species Act (ESA) (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*) and the Bald and Golden

Eagle Protection Act (BGEPA) (54 Stat. 250, as amended; 16 U.S.C. 668-668d). Eagle Creek has been designated by the FERC as the non-federal representative for the purposes of completing informal consultation pursuant to Section 7(a)(2) of the ESA.

Eagle Creek has included our October 28, 2016, Information for Planning and Consultation (IPaC) correspondence listing the dwarf wedgemussel (*Alasmidonta heterodon*), small whorled pogonia (*Isotria medeolodies*), bog turtle (*Clemmys (=Glyptemys) muhlenbergii*), Indiana bat (*Myotis sodalis*), and northern long-eared bat (*Myotis septentrionalis*) as species listed under the ESA that may be affected by the Projects. The Service requests that an additional species, northeastern bulrush (*Scirpus ancistrochaetus*), be added to the list of special status species. The Service has been engaged in efforts to generate a range-wide model for potential suitable habitat for northeastern bulrush, and while this information is not currently present in the IPaC system, our best available information indicates that there are high probability areas for suitable habitat for this species in the Mongaup River Basin. The IPaC range for this species will likely be updated during 2018 to incorporate this new information.

Eagle Creek will be conducting separate focused surveys for the dwarf wedgemussel and bald eagle, as required by the SPD; therefore, these species are not included under the special status species study. We have no additional comments on planned surveys for these species. Eagle Creek has proposed not to survey for the Indiana bat or northern long-eared bat; proposing instead to assume presence and develop a management plan for these two bat species as a PME measure for the Projects. The Service looks forward to reviewing the draft management plan and appreciates the proactive incorporation of PME measures during relicensing by Eagle Creek.

Three species protected under the ESA are proposed or recommended to be surveyed under the protected species study methodologies: small whorled pogonia, bog turtle, and northeastern bulrush. In order to guide the geographic scope of the studies for these species, the Service evaluated our currently available information regarding these species. We do not expect suitable habitat for the bog turtle in the Project areas; therefore, we do not recommend surveys for this species. For the small whorled pogonia and northeastern bulrush, there are no known occurrences in the Project areas; however, the Service has identified several small high-priority survey areas within, or in close proximity to, the Project boundaries, based on recent potential suitable habitat modeling efforts (enclosure). Northeastern bulrush occurs in forested wetlands, vernal pools, and adjacent to beaver ponds in other parts of its range. We recommend that surveys for northeastern bulrush be conducted in these habitats, if additional areas are encountered during the relicensing studies. Should Project plans change, and any impacts are expected to upland areas surrounding the Projects, including NYSDEC lands, there are additional areas of potential suitable habitat where the Service would likely recommend surveys for these species.

The most recent compilation of federally listed and proposed endangered and threatened species in New York is available for your information. Until the Final License Application is complete, we recommend that you check our website regularly to ensure that listed species presence/absence information for the Project is current.*

Bald Eagles

Eagle Creek has requested that the Service, NYSDEC, and NPS provide any additional existing information related to the occurrence of bald eagles at the Projects. The Service has no additional information for this species, and we understand that Eagle Creek will work with the NYSDEC and NPS to obtain additional bald eagle information.

The Service notes that the bald eagle does not have a federal status listed on the Special Status Species Table. We recommend that this species' protected status under the BGEPA be indicated in the table. In addition, the Service is aware that golden eagles (*Aquila chrysaetos*) are known to occur infrequently at the Projects and are protected under the BGEPA. We recommend golden eagles and their federal status be included in the table. We recommend that any observations of this species be recorded as part of the relicensing studies.

Fisheries

Eagle Creek has requested additional information regarding fisheries information from the NYSDEC. The Service looks forward to reviewing the results of the field studies and the evaluation of the existing data that the NYSDEC may provide.

* * * * *

Thank you for your continued consultation efforts during the relicensing of the Mongaup Falls Projects. If you require additional information, please contact John Wiley at 607-753-9334.

Sincerely,

David A. Stilwell

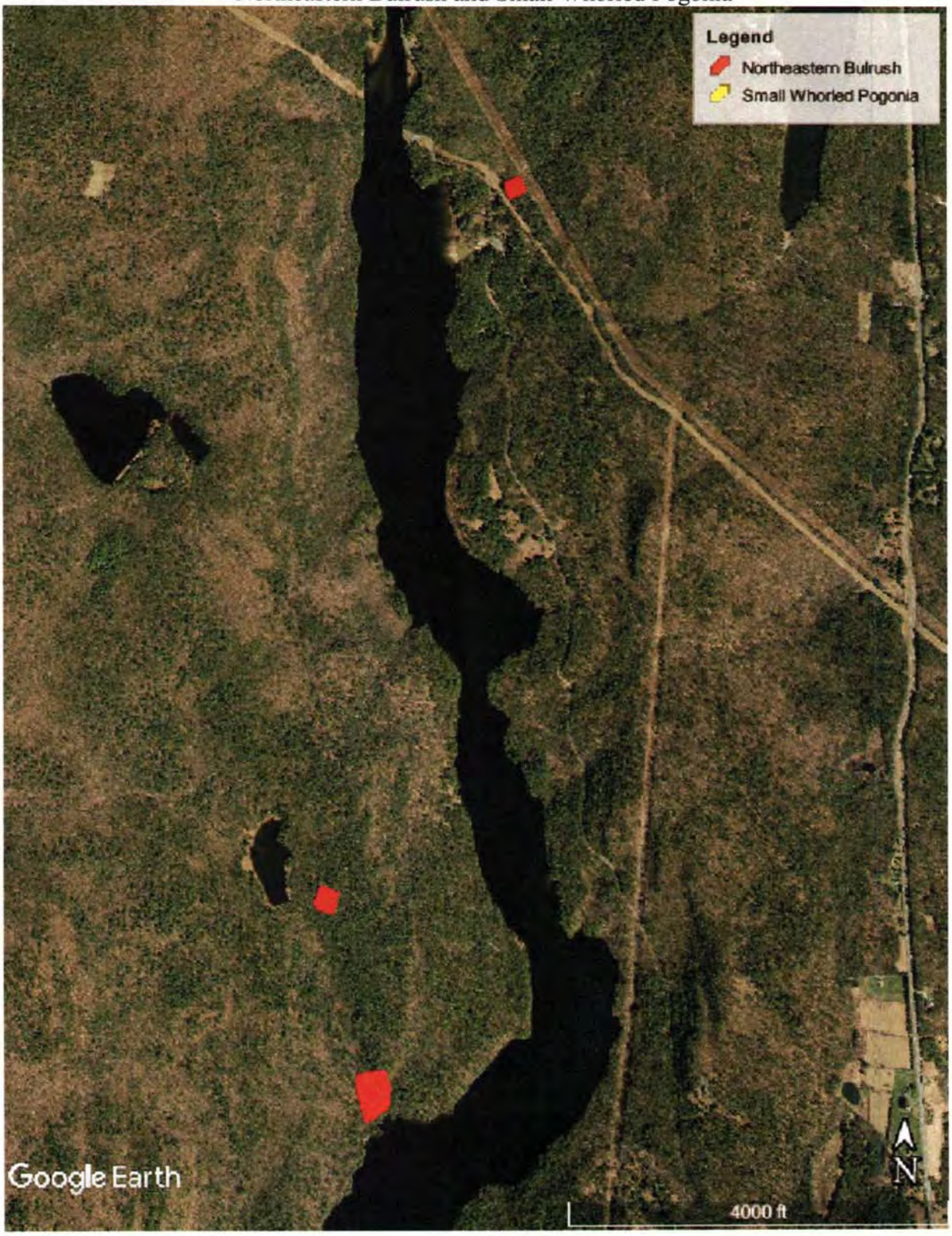
David A. Stilwell
Field Supervisor

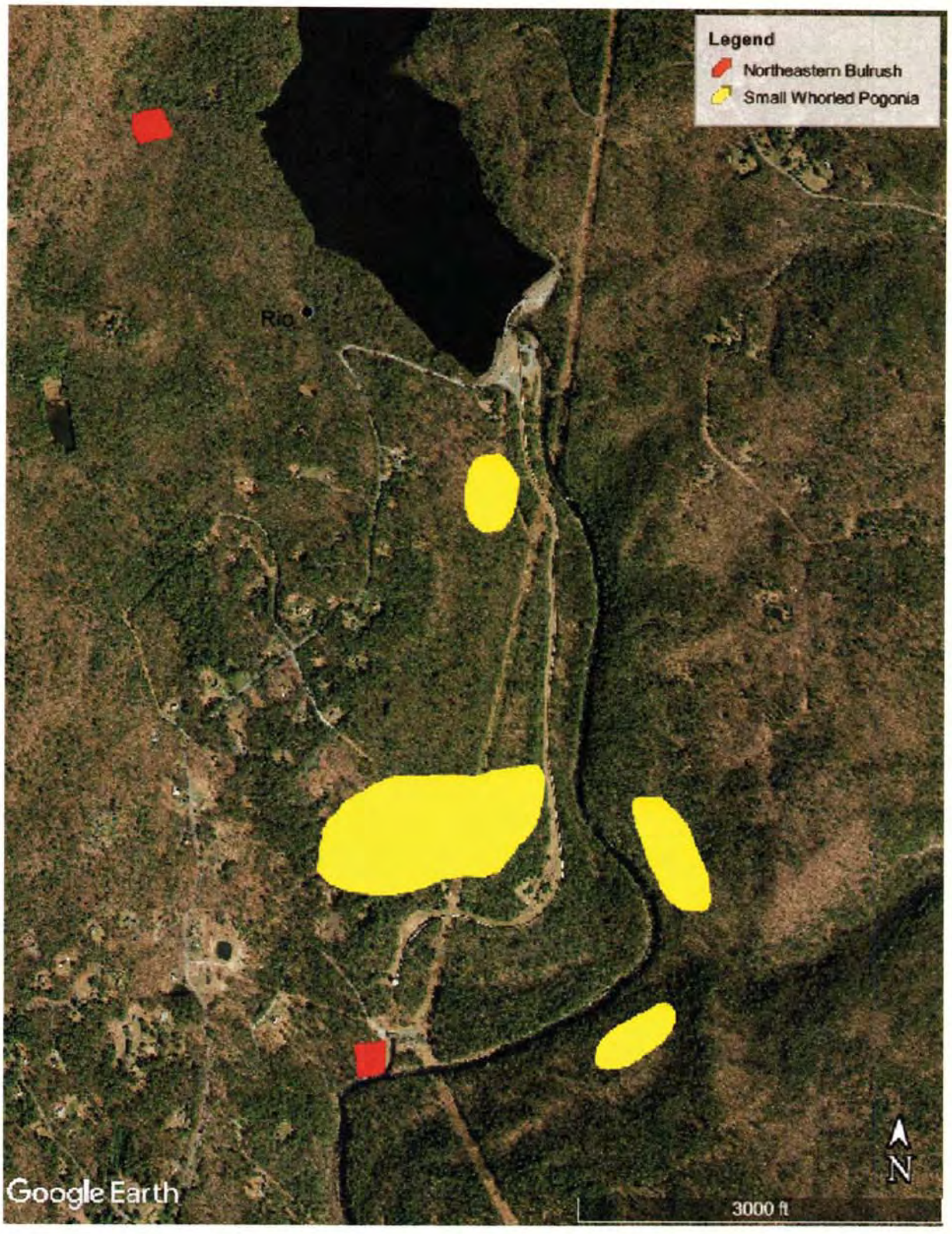
*Additional information referred to above may be found on our website at:
http://www.fws.gov/northeast/nyfo/es/section7.htm

Enclosure

cc: FERC e-file
HDR, Syracuse, NY (J. Gibson)
NYSDEC, New Paltz, NY (J. Murray, M. Flaherty, N. Ermer, B. Drumm)
New York Natural Heritage Program, Albany, NY (N. Conrad, R. Ring, S. Young)
FERC, Washington, D.C. (Q. Emmering)
NPS, Boston, MA (K. Mendik)
NPS, Beach Lake, PA (D. Hamilton, J. Newbern)
DOI, SOL, Newton, MA (L. Tyhach)

Potential Suitable Habitat Model-based
Recommended Priority Survey Areas at the Mongaup River Projects
Northeastern Bulrush and Small Whorled Pogonia




Legend
Northeastern Bulrush
Small Whorled Pogonia
Rio
Google Earth
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Legend
Northeastern Bulrush
Small Whorled Pogonia
Google Earth
N
3000 ft

E-file Submission

August 1, 2018

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

Subject: Swinging Bridge Hydroelectric Project (FERC No. P-10482-117)
Mongaup Falls Hydroelectric Project (FERC No. P-10481-067)
Rio Hydroelectric Project (FERC No. P-9690-112)
Second Quarterly Study Progress Report

Dear Secretary Bose:

Eagle Creek Hydro Power, LLC, Eagle Creek Water Resources, LLC, and Eagle Creek Land Resources, LLC (collectively "Eagle Creek") herein submits the second quarterly study progress report for the Swinging Bridge, Mongaup Falls, and Rio Hydroelectric Projects (collectively "Mongaup River Hydroelectric Projects" or "Projects"). The Mongaup River Hydroelectric Projects are located on the Mongaup River in Sullivan and Orange Counties, New York, and are licensed by the Federal Energy Regulatory Commission ("FERC" or "Commission").

The FERC licenses for the Mongaup River Hydroelectric Projects expire on March 31, 2022, and Eagle Creek is pursuing new licenses for each of the three Projects. On March 30, 2017, Eagle Creek filed with FERC Notices of Intent (NOIs) to file a license application for new licenses for the Projects. Consistent with the Commission's Integrated Licensing Process (ILP) and 18 CFR §5.13, Eagle Creek filed the Revised Study Plan (RSP) with the Commission on January 10, 2018 and the Commission issued the Study Plan Determination (SPD) on February 9, 2018.

Pursuant to the RSP, Eagle Creek herein submits the second quarterly study progress report for the period from May 1, 2018 through July 31, 2018 for the Mongaup River Hydroelectric Projects. The enclosed table (report) provides a list of the approved studies and associated status of progress as well as any modifications to the approved methodologies.

In addition to filing a copy of this letter with the Commission, Eagle Creek is distributing this letter to the parties listed on the enclosed distribution list. For parties who have provided an

email address, Eagle Creek is distributing this letter via email, otherwise Eagle Creek is distributing this letter via mail.

If there are any questions regarding this information, please do not hesitate to contact Michael Scarzello with Eagle Creek at (973) 998-8400 or Jim Gibson with HDR at (315) 414-2202.

Sincerely,
Eagle Creek (Licensees)

Michael Scarzello
Director

Attachments (2)

cc: Attached Distribution List

SECOND QUARTERLY STUDY PROGRESS REPORT

Mongaup River Hydroelectric Projects Second Quarterly Study Progress Report (May 1, 2018 – July 31, 2018)			
No.	**Study**	**Status**	**Modifications to Methodology**
1	Reservoir Water Level Fluctuation/Operation Model Study	Consistent with the approved study plan, the study will be completed prior to issuance of the Initial Study Report (ISR).	None.
2	Aquatic Habitat Assessment Study	Consistent with the approved study plan: • Multi-beam and side-scan sonar surveys were performed on each reservoir in June; and • The study will be completed prior to issuance of the ISR.	None.
3	Fisheries Survey Study	Consistent with the approved study plan: • Weekly American eel and American shad surveys commenced on May 3, 2018; • Gillnet sampling events occurred in May, June, and July; and • The study will be completed prior to issuance of the ISR.	None.
4	Fish Entrainment/ Impingement Study	Consistent with the approved study plan, the study will be completed prior to issuance of the ISR.	None.
5	Water Quality Study	Consistent with the approved study plan: • Continuous water quality data has been collected at 18 locations throughout the system in May, June, and July; • Impoundment profile water quality data was collected during data downloads in May, June and July, with the exception of two occasions (May 21 and 30) at Cliff Lake Reservoir and Swinging Bridge Reservoir due to downed trees and power lines from a severe storm event that precluded access to the reservoirs; • Pursuant to consultation with the U.S. Fish and Wildlife Service (USFWS), National Park Service (NPS), and New York State Department of Environmental Conservation (NYSDEC), twelve water temperature monitors were deployed in the Delaware River on June 6 and 12, 2018; • On July 11, 2018, data was downloaded from 11 of the 12 water temperature monitors on the Delaware River (T2-RC monitor could not be located). Once flows in the Delaware River decrease below 1,000 cfs, another data download event will occur and replacement monitors will be installed as needed; and • The study will be completed prior to issuance of the ISR.	None.

Mongaup River Hydroelectric Projects Second Quarterly Study Progress Report (May 1, 2018 – July 31, 2018)			
No.	**Study**	**Status**	**Modifications to Methodology**
6	Macroinvertebrate and Mussel Survey	Consistent with the approved study plan: • Mussel surveys were performed in Black Lake Creek and the Mongaup River throughout the Project area on July 9-12, 2018; no mussels or mussel shells were observed; • The Mongaup River from Rio main powerhouse tailrace to the Delaware River was snorkeled to identify mussel beds on July 9-10, 2018; no mussels or mussel shells were observed; • Macroinvertebrate sampling was performed on July 23-24, 2018. Significant thunderstorms and precipitation were forecasted at the Project on July 25-26 causing the additional macroinvertebrate sampling to be postponed until August; and • The study will be completed prior to issuance of the ISR.	None.
7	Recreation Facility Inventory, Recreation Use and Needs Assessment, and Reservoir Surface Area Assessment Study	Consistent with the approved study plan: • Recreation spot counts and recreation user surveys commenced on April 1; • Use counts and user survey collection will continue through March 31, 2019; • Field work for the recreation inventory was completed in July 2018; and • The study will not be completed until 2019, but a study update will be provided in the ISR.	None.
8	Whitewater Boating Assessment Study	Consistent with the approved study plan: • A schedule for structured interviews of whitewater boaters was developed for 10 whitewater release dates in 2018; • Whitewater boater surveys commenced in May and are ongoing in accordance with the established schedule; • Collection of boater sign-in logs for future analysis has commenced and is continuing; • Efforts are being made to locate and survey boaters familiar with the Rio bypass reach; and • The study will be completed prior to issuance of the ISR.	None.
9	Shoreline Management Assessment Study	Consistent with the approved study plan: • Consultation for means of distribution of the survey occurred in June 2018; • Distribution of the survey occurred in late July 2018; • The study will be completed prior to issuance of the ISR.	None.

Mongaup River Hydroelectric Projects Second Quarterly Study Progress Report (May 1, 2018 – July 31, 2018)			
No.	**Study**	**Status**	**Modifications to Methodology**
10	Cultural Resources Study	Consistent with the approved study plan: • Consultation regarding the APE and the Phase IA literature review and sensitivity assessment were conducted in May 2018; • Research and field assessment of historic structures was completed in June 2018; • Phase 1A archaeology field work was completed in July 2018; and • The study will be completed prior to issuance of the ISR.	None.
11	Black Brook Dam Decommissioning Study	Consistent with the approved study plan: • The environmental field reconnaissance in the vicinity of Black Brook Dam was completed on June 27-28, 2018; • Additional existing design drawings of Black Brook Dam were obtained and reviewed to define the size and configuration of the dam; and • The study will be completed prior to issuance of the ISR.	None.
12	Special-Status Species Survey Study	Consistent with the approved study plan: • Consultation with the USFWS and NYSDEC to confirm which special-status species potentially occur in the Projects' area was performed in May and June; • In June, the USFWS and NYSDEC provided information related to special-status species in support of the study; and • The study will be completed prior to issuance of the ISR.	None.
13	Bald Eagle Management Study	Consistent with the approved study plan, consultation with the USFWS, NPS, NYSDEC, and Delaware Highlands Conservancy (DHC) to obtain existing information on eagles in the Mongaup River System was performed in May and June. Pursuant to the SPD, the visual field surveys will be performed between November 1, 2018 and June 30, 2019. The results of this study will be provided in a report subsequent to the completion of the study.	None.
14	Bypass/Base Flow Transect Evaluation Study	Consistent with the approved study plan, the study will be completed prior to issuance of the ISR.	None.
15	Alewife Study	Consistent with the approved study plan, the study will be completed prior to issuance of the ISR.	None.

Mongaup River Hydroelectric Projects Second Quarterly Study Progress Report (May 1, 2018 – July 31, 2018)			
No.	**Study**	**Status**	**Modifications to Methodology**
16	Wetland Study	Consistent with the approved study plan: • Wetland field surveys were completed in late June; and • The study will be completed prior to issuance of the ISR.	None.

DISTRIBUTION LIST

Swinging Bridge Hydroelectric Project (FERC No. 10482)
Mongaup Falls Hydroelectric Project (FERC No. 10481)
Rio Hydroelectric Project (FERC No. 9690)
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Mongaup Falls Hydroelectric Project (FERC No. 10481)
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Mongaup Falls Hydroelectric Project (FERC No. 10481)
Rio Hydroelectric Project (FERC No. 9690)
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U.S. Coast Guard
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Swinging Bridge Hydroelectric Project (FERC No. 10482)
Mongaup Falls Hydroelectric Project (FERC No. 10481)
Rio Hydroelectric Project (FERC No. 9690)
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Swinging Bridge Hydroelectric Project (FERC No. 10482)
Mongaup Falls Hydroelectric Project (FERC No. 10481)
Rio Hydroelectric Project (FERC No. 9690)
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Mongaup Falls Hydroelectric Project (FERC No. 10481)
Rio Hydroelectric Project (FERC No. 9690)
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Mongaup Falls Hydroelectric Project (FERC No. 10481)
Rio Hydroelectric Project (FERC No. 9690)
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Mongaup Falls Hydroelectric Project (FERC No. 10481)
Rio Hydroelectric Project (FERC No. 9690)
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*Contact receives a hard copy of the distribution via mail and an electronic copy of the distribution via email.

From: DiSarno, Michael A (DEC) <michael.disarno@dec.ny.gov>
Sent: Tuesday, September 11, 2018 11:58 AM
To: Sears, Michael
Cc: Flaherty, Michael J (DEC); Hogan, Chris M (DEC)
Subject: RE: Mongaup Information Needs - Rio Reservoir Fisheries Survey (# 393031) Example
Attachments: qselMongaupIF.xlsx; qselMongaupSL.xlsx; qselMongaupGP.xlsx; qselMongaupCV.xlsx; qselMongaupC.xlsx; qselMongaupA.xlsx

Hi Mike,

Attached are spreadsheets containing the fisheries information you requested. Please review them and let us know if you have any questions, concerns or if you need anything further.

Thanks
Mike

From: Sears, Michael [mailto:Michael.Sears@hdrinc.com]
Sent: Monday, September 10, 2018 10:42 AM
To: DiSarno, Michael A (DEC) <michael.disarno@dec.ny.gov>
Cc: Flaherty, Michael J (DEC) <michael.flaherty@dec.ny.gov>; Hogan, Chris M (DEC) <chris.hogan@dec.ny.gov>
Subject: RE: Mongaup Information Needs - Rio Reservoir Fisheries Survey (# 393031) Example

Hi Michael D,

I believe we spoke several months back about a request for additional fish data from the Mongaup River, correct? I thought we spoke and then I followed up with an email, but I'm not finding this email, and I haven't heard back on the data yet. You (or whoever I spoke with) were just about to head out on vacation when we spoke, so I understand if it slipped through the cracks, and apologies if I never sent that follow up email. I know I drafted it but maybe it never got sent out.

Thanks!

Michael S. Sears
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From: Sears, Michael
Sent: Wednesday, June 20, 2018 4:52 PM

To: Flaherty, Michael J (DEC) <michael.flaherty@dec.ny.gov>
Subject: Re: Mongaup Information Needs - Rio Reservoir Fisheries Survey (# 393031) Example

Perfect! Thanks for getting back to me so quick!

On Jun 20, 2018, at 4:49 PM, Flaherty, Michael J (DEC) <michael.flaherty@dec.ny.gov> wrote:

> Hello Michael,
>
> Thank you for narrowing down your request. I will send this up to our database people in our Central Office and work with them on setting up a query to excise this information. I will get back to you on the timeline for getting that data to you after I discuss it with them.
>
> Mike

From: Sears, Michael [mailto:Michael.Sears@hdrinc.com]
Sent: Wednesday, June 20, 2018 4:42 PM
To: Flaherty, Michael J (DEC) <michael.flaherty@dec.ny.gov>
Cc: kevin_mendik@nps.gov; Gibson, Jim <Jim.Gibson@hdrinc.com>; don_hamilton@nps.gov; john_wiley@fws.gov; Michael.Scarzello@eaglecreekre.com; Russell, Cate <Cate.Russell@hdrinc.com>; Kevin.VerWeire@hdrinc.com; Hogan, Chris M (DEC) <chris.hogan@dec.ny.gov>; Drumm, Brian R (DEC) <brian.drumm@dec.ny.gov>; Ermer, Nathan M (DEC) <nathan.ermer@dec.ny.gov>; DiSarno, Michael A (DEC) <michael.disarno@dec.ny.gov>; Jaak.Vandensype@hdrinc.com
Subject: RE: Mongaup Information Needs - Rio Reservoir Fisheries Survey (# 393031) Example

Mike,

We have reviewed the example information that you provided in the PDF reports and the excel spreadsheet. We can work with the excel file format that you provided, with some additional information that is shown on the PDF files. We went through each PDF report and noted the attributes that we are interested in for each survey and site. This is summarized in the table below. If it is easier for you guys, we will take all attributes for the reports in the below table as well.

Report ID	Report Description	Minimum Attributes Requested
CV	Survey Cover Sheet	All attributes
SL	Site Location	All attributes
IF	Individual Fish	Site, Rep #, Fish Number, Species Code, Species, Length, Weight, Wild
C	Water Chemistry	Water Temp, Dissolved Oxygen, Bottom Depth, Secchi Depth
GP	Gear Performance	Site, Rep #, Gear Code/Type, Time Start, Time Stop, Time Fished
A	Individual Fish Ages	All attributes

In addition, we request any bulk fish count data you have for each survey and habitat characteristics for each survey site.

If you have any questions about this, we are available to further discuss the best way for us to acquire the requested data.

Thanks!

Michael S. Sears
Senior Environmental Scientist/Fish Biologist

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From: Flaherty, Michael J (DEC) [mailto:michael.flaherty@dec.ny.gov]
Sent: Thursday, May 31, 2018 3:50 PM
To: Gibson, Jim <Jim.Gibson@hdrinc.com>; kevin_mendik@nps.gov; don_hamilton@nps.gov; John Wiley <john_wiley@fws.gov>; Michael Scarzello (Michael.Scarzello@eaglecreekre.com) <Michael.Scarzello@eaglecreekre.com>; Russell, Cate <Cate.Russell@hdrinc.com>; VerWeire, Kevin <Kevin.VerWeire@hdrinc.com>; Hogan, Chris M (DEC) <chris.hogan@dec.ny.gov>
Cc: Drumm, Brian R (DEC) <brian.drumm@dec.ny.gov>; Ermer, Nathan M (DEC) <nathan.ermer@dec.ny.gov>; DiSarno, Michael A (DEC) <michael.disarno@dec.ny.gov>
Subject: Mongaup Information Needs - Rio Reservoir Fisheries Survey (# 393031) Example

Hello,
As we discussed in our conference call this afternoon, I have attached a group of files that serve as an example of the type of information we can provide for one of our Centrarchid Plan boat electrofishing surveys. For this one survey on Rio Reservoir (Survey 393031), there were six different pdf files generated. In this particular example, the number of pages within each file ranges from 1 to 33 pages. I believe this is probably not exactly what you are looking for. If the type of information you need can be narrowed down, we can probably do a custom data draw to provide you with a spreadsheet of focused data. The second tab in the attached spreadsheet could be expanded to include additional information for each fish collected, from each site, from each survey.
Mike

Michael J. Flaherty
Fisheries Manager – Region 3, Division of Fish, Wildlife and Marine Resources

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www.dec.ny.gov | <image001.png> | <image002.png>

-----Original Appointment-----
From: Gibson, Jim [mailto:Jim.Gibson@hdrinc.com]
Sent: Tuesday, May 29, 2018 12:56 PM
To: Gibson, Jim; Murray, Joseph R (DEC); Flaherty, Michael J (DEC); kevin_mendik@nps.gov; don_hamilton@nps.gov; John Wiley; Michael Scarzello (Michael.Scarzello@eaglecreekre.com); Russell, Cate; Kevin.VerWeire@hdrinc.com; Hogan, Chris M (DEC)
Cc: Drumm, Brian R (DEC)
Subject: Mongaup Information Needs
When: Thursday, May 31, 2018 2:00 PM-3:00 PM (UTC-05:00) Eastern Time (US & Canada).
Where: (866) 583-7984 -- Conference code: 2938254026#

As a follow up to a request, we are moving this call to tomorrow at 2:00.

Good Afternoon,

As a follow up to the responses to the previous email, let's see if tomorrow at 2:00 works for a call to touch base regarding the information needed in support of the ongoing studies.

Toll-free dial-in number (U.S. and Canada):
(866) 583-7984
Conference code:
2938254026#

Thanks

Jim Gibson, MPA, MSES
Vice President

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E-file Submission

November 1, 2018

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

Subject: Swinging Bridge Hydroelectric Project (FERC No. P-10482-117)
Mongaup Falls Hydroelectric Project (FERC No. P-10481-067)
Rio Hydroelectric Project (FERC No. P-9690-112)
Third Quarterly Study Progress Report

Dear Secretary Bose:

Eagle Creek Hydro Power, LLC, Eagle Creek Water Resources, LLC, and Eagle Creek Land Resources, LLC (collectively "Eagle Creek") herein submits the third quarterly study progress report for the Swinging Bridge, Mongaup Falls, and Rio Hydroelectric Projects (collectively "Mongaup River Hydroelectric Projects" or "Projects"). The Mongaup River Hydroelectric Projects are located on the Mongaup River in Sullivan and Orange Counties, New York, and are licensed by the Federal Energy Regulatory Commission ("FERC" or "Commission").

The FERC licenses for the Mongaup River Hydroelectric Projects expire on March 31, 2022, and Eagle Creek is pursuing new licenses for each of the three Projects. On March 30, 2017, Eagle Creek filed with FERC Notices of Intent (NOIs) to file a license application for new licenses for the Projects. Consistent with the Commission's Integrated Licensing Process (ILP) and 18 CFR §5.13, Eagle Creek filed the Revised Study Plan (RSP) with the Commission on January 10, 2018 and the Commission issued the Study Plan Determination (SPD) on February 9, 2018.

Pursuant to the RSP, Eagle Creek herein submits the third quarterly study progress report for the period from August 1, 2018 through October 31, 2018 for the Mongaup River Hydroelectric Projects. The enclosed table (report) provides a list of the approved studies and associated status of progress as well as any modifications to the approved methodologies.

In addition to filing a copy of this letter with the Commission, Eagle Creek is distributing this letter to the parties listed on the enclosed distribution list. For parties who have provided an

email address, Eagle Creek is distributing this letter via email, otherwise Eagle Creek is distributing this letter via mail.

If there are any questions regarding this information, please do not hesitate to contact Michael Scarzello with Eagle Creek at (973) 998-8400 or Jim Gibson with HDR at (315) 414-2202.

Sincerely,
Eagle Creek (Licensees)

Mr. Michael Scarzello
Director

Attachments (2)

cc: Attached Distribution List

THIRD QUARTERLY STUDY PROGRESS REPORT

Mongaup River Hydroelectric Projects Third Quarterly Study Progress Report (August 1, 2018 through October 31, 2018)			
No.	**Study**	**Status**	**Modifications to Methodology**
1	Reservoir Water Level Fluctuation/Operation Model Study	Consistent with the approved study plan, the study will be completed prior to issuance of the Initial Study Report (ISR).	None.
2	Aquatic Habitat Assessment Study	Consistent with the approved study plan: • Multi-beam and side-scan sonar surveys were performed on each reservoir in June. • Supplemental field observations are scheduled to occur in November 2018 as allowed by river flows and reservoir elevations.	None.
3	Fisheries Survey Study	Consistent with the approved study plan: • Weekly American eel and American shad surveys commenced on May 3, 2018; • Intake gillnet sampling events occurred in May, June, July, September, and October; • The comprehensive baseline fisheries surveys of each reservoir and associated stream reaches was performed between early August and late October 2018; and • The study will be completed prior to issuance of the ISR.	None.
4	Fish Entrainment/ Impingement Study	Consistent with the approved study plan, the study will be completed prior to issuance of the ISR.	None.
5	Water Quality Study	Consistent with the approved study plan: • Continuous water quality data has been collected at 18 locations throughout the system since early May and is scheduled to be completed by November 2, 2018; • Impoundment profile water quality data was collected during data downloads since early May with the exception of two occasions (May 21 and 30) at Cliff Lake Reservoir and Swinging Bridge Reservoir due to downed trees and power lines from a severe storm event that precluded access to the reservoirs; • Pursuant to consultation with the U.S. Fish and Wildlife Service (USFWS), National Park Service (NPS), and New York State Department of Environmental Conservation (NYSDEC), twelve water temperature monitors were deployed in the Delaware River in June 2018; • On July 11, 2018, data was downloaded from 11 of the 12 water temperature monitors on the Delaware River (T2-RC monitor could not be located). Once flows in the Delaware River decrease below 1,000 cfs, another data download event will occur; and • The study will be completed prior to issuance of the ISR.	None.

Mongaup River Hydroelectric Projects Third Quarterly Study Progress Report (August 1, 2018 through October 31, 2018)			
No.	**Study**	**Status**	**Modifications to Methodology**
6	Macroinvertebrate and Mussel Survey	Consistent with the approved study plan: • Mussel surveys were performed in Black Lake Creek and the Mongaup River throughout the Project area on July 9-12, 2018; no mussels or mussel shells were observed during these surveys; • The Mongaup River from Rio main powerhouse tailrace to the Delaware River was snorkeled to identify mussel beds on July 9-10, 2018; no mussels or mussel shells were observed; • Macroinvertebrate sampling was performed on July 23-24 and August 21-23, 2018 and is being analyzed by a state-certified laboratory; and • The study will be completed prior to issuance of the ISR.	None.
7	Recreation Facility Inventory, Recreation Use and Needs Assessment, and Reservoir Surface Area Assessment Study	Consistent with the approved study plan: • Recreation spot counts and recreation user surveys commenced on April 1; • Use counts and user survey collection will continue through March 31, 2019; • Field work for the recreation inventory was completed in July 2018; • As of October 22, 2018, 89 recreation user surveys have been completed with 33 users declining the survey; and • The study will not be completed until 2019, but a study update will be provided in the ISR.	Additional time has been spent during recreation survey days revisiting the most popular recreation sites in an effort to collect more user surveys.
8	Whitewater Boating Assessment Study	Consistent with the approved study plan: • A schedule for structured interviews of whitewater boaters was developed for 10 whitewater release dates in 2018; • Whitewater boater surveys commenced in May, were collected throughout the summer in accordance with the established schedule, and concluded in October; • During study activities, no whitewater boaters were observed in the Rio bypass reach, including the weekend in October when high flows resulted in spill over the Rio Dam into the bypass reach. • Collection of boater sign-in logs continued throughout the whitewater season; • Efforts were made to locate and survey boaters familiar with the Rio bypass reach; and • The study will be completed prior to issuance of the ISR.	Although no whitewater boaters were observed in the bypass reach during the 2018 study activities to date, surveyors at the whitewater launch identified 14 people who indicated they had previously boated the Rio bypass reach and said they would complete a survey of their experience.

Mongaup River Hydroelectric Projects Third Quarterly Study Progress Report (August 1, 2018 through October 31, 2018)			
No.	**Study**	**Status**	**Modifications to Methodology**
9	Shoreline Management Assessment Study	Consistent with the approved study plan: • Consultation for means of distribution of the survey occurred in June 2018; • The initial distribution of the survey occurred in early August 2018; • For non-respondents, a follow-up notice and duplicate survey were resent in early September 2018; • Over 50% of the surveys distributed were completed and returned as of October 2018; and • The study will be completed prior to issuance of the ISR.	None.
10	Cultural Resources Study	Consistent with the approved study plan: • Consultation regarding the APE and the Phase IA literature review and sensitivity assessment were conducted in May 2018; • Research and field assessment of historic structures was completed in June 2018; • Phase 1A archaeology field work was completed in July 2018; and • The study will be completed prior to issuance of the ISR.	None.
11	Black Brook Dam Decommissioning Study	Consistent with the approved study plan: • The environmental field reconnaissance in the vicinity of Black Brook Dam was completed on June 27-28, 2018; • Additional existing design drawings of Black Brook Dam were obtained and reviewed to define the size and configuration of the dam; and • The study will be completed prior to issuance of the ISR.	None.
12	Special-Status Species Survey Study	Consistent with the approved study plan: • Consultation with the USFWS and NYSDEC to confirm which special-status species potentially occur in the Projects' area was performed in May and June; • In June, the USFWS and NYSDEC provided information related to special-status species in support of the study; • In early September, field surveys were performed in areas identified as areas of potential habitat or species occurrence for Northeastern bullrush and Small whorled pogonia; no habitat or species occurrence was observed; and • The study will be completed prior to issuance of the ISR.	None.

Mongaup River Hydroelectric Projects Third Quarterly Study Progress Report (August 1, 2018 through October 31, 2018)			
No.	**Study**	**Status**	**Modifications to Methodology**
13	Bald Eagle Management Study	Consistent with the approved study plan: • Consultation with the USFWS, NPS, NYSDEC, and Delaware Highlands Conservancy (DHC) to obtain existing information on eagles in the Mongaup River System was performed in May and June. • Pursuant to the SPD, the visual field surveys will be performed between November 1, 2018 and June 30, 2019. The results of this study will be provided in a report subsequent to the completion of the study.	None.
14	Bypass/Base Flow Transect Evaluation Study	Consistent with the approved study plan: • Consultation with the USFWS and NYSDEC to identify the target study flows for each stream reach was performed in September and October 2018; • Flow transect evaluation work commenced in mid-October and is scheduled to be completed by November 2, 2018. • The study will be completed prior to issuance of the ISR.	None.
15	Alewife Study	Consistent with the approved study plan, the study will be completed prior to issuance of the ISR.	None.
16	Wetland Study	Consistent with the approved study plan: • Wetland field surveys were completed in late June 2018; and • The study will be completed prior to issuance of the ISR.	None.

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Rio Hydroelectric Project (FERC No. 9690)
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Swinging Bridge Hydroelectric Project (FERC No. 10482)
Mongaup Falls Hydroelectric Project (FERC No. 10481)
Rio Hydroelectric Project (FERC No. 9690)
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E-file Submission

February 8, 2019

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

Subject: Swinging Bridge Hydroelectric Project (FERC No. P-10482-117)
Mongaup Falls Hydroelectric Project (FERC No. P-10481-067)
Rio Hydroelectric Project (FERC No. P-9690-112)
Initial Study Report

Dear Secretary Bose:

Eagle Creek Hydro Power, LLC, Eagle Creek Water Resources, LLC, and Eagle Creek Land Resources, LLC (collectively "Eagle Creek") are the owners and operators of the Swinging Bridge, Mongaup Falls, and Rio Hydroelectric Projects (collectively "Mongaup River Hydroelectric Projects" or "Projects"). The Mongaup River Hydroelectric Projects are located on the Mongaup River in Sullivan and Orange Counties, New York, and are licensed by the Federal Energy Regulatory Commission ("FERC" or "Commission").

The FERC licenses for the Mongaup River Hydroelectric Projects expire on March 31, 2022, and Eagle Creek is pursuing new licenses for each of the Projects. On March 30, 2017, Eagle Creek filed with FERC Notices of Intent (NOIs) to file a license application for new licenses for the Projects under the Commission's Integrated Licensing Process (ILP).

In accordance with 18 CFR §5.15, Eagle Creek has initiated studies and information gathering activities as provided in Eagle Creek's January 10, 2018 Revised Study Plan and as approved and modified by the Commission's Study Plan Determination (SPD) issued on February 9, 2018. The Commission's regulations at 18 CFR §5.15(c) direct Eagle Creek to prepare and file an Initial Study Report (ISR) within one year of the Commission's SPD. The enclosed ISR describes Eagle Creek's overall progress in implementing the study plan, the data collected, and any variances from the plan.

The Commission's regulations at 18 CFR 5.15(c) require Eagle Creek to hold a meeting with relicensing participants and FERC staff within 15 days of filing the enclosed ISR. **Eagle Creek**

will hold the ISR Meeting from 8:00 AM to 5:00 PM on February 13 and 14, 2019 at the Monticello Fire Station, located at 23 Richardson Avenue, Monticello, NY 12701.

Concomitant with this filing, Eagle Creek is notifying resources agencies, Indian tribes, and other stakeholders of the availability of the ISR and inviting their participation in the ISR Meeting. To ensure adequate accommodations for participants, Eagle Creek respectfully requests that those planning on attending the ISR Meeting RSVP by emailing Cate Russell with HDR at Cate.Russell@hdrinc.com on or before February 11, 2019.

In addition to filing a copy of the ISR with the Commission, Eagle Creek is distributing this cover letter to the parties listed on the enclosed distribution list. For parties on the distribution list who have provided an email address, Eagle Creek is distributing this cover letter via email, otherwise Eagle Creek is distributing this cover letter via mail.

A copy of the ISR may be obtained electronically through FERC's eLibrary system at https://elibrary.ferc.gov/idmws/search/fercgensearch.asp under docket numbers P-10482, P-10481, and P-9690. In addition, a copy of the ISR may be obtained through Eagle Creek's website at www.eaglecreekre.com/mongaup-river-relicensing. If you would like to request a CD containing a copy of the ISR, please contact Jane Manibusan with Eagle Creek at (920) 293-4628 (ext. 318) or Jane.Manibusan@eaglecreekre.com.

If there are any questions regarding this letter or the ISR, please do not hesitate to contact Michael Scarzello with Eagle Creek at (973) 998-8400 or Jim Gibson with HDR at (315) 414-2202.

Sincerely,
Eagle Creek (Licensees)

Mr. Michael Scarzello
Regulatory Director

cc: Distribution List

Enclosure: Initial Study Report

E-file Submission

March 11, 2019

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

Subject: Swinging Bridge Hydroelectric Project (FERC No. P-10482-117)
Mongaup Falls Hydroelectric Project (FERC No. P-10481-067)
Rio Hydroelectric Project (FERC No. P-9690-112)
Initial Study Report Meeting Summary

Dear Secretary Bose:

Eagle Creek Hydro Power, LLC, Eagle Creek Water Resources, LLC, and Eagle Creek Land Resources, LLC (collectively "Eagle Creek") are the owners and operators of the Swinging Bridge, Mongaup Falls, and Rio Hydroelectric Projects (collectively "Mongaup River Hydroelectric Projects" or "Projects"). The Mongaup River Hydroelectric Projects are located on the Mongaup River in Sullivan and Orange Counties, New York, and are licensed by the Federal Energy Regulatory Commission ("FERC" or "Commission").

The FERC licenses for the Mongaup River Hydroelectric Projects expire on March 31, 2022, and Eagle Creek is pursuing new licenses for each of the Projects. On March 30, 2017, Eagle Creek filed with FERC Notices of Intent (NOIs) to file a license application for new licenses for the Projects under the Commission's Integrated Licensing Process (ILP).

In accordance with 18 CFR §5.15(c), Eagle Creek filed the Initial Study Report (ISR) with the Commission on February 8, 2019. The ISR provided details regarding the study activities performed by Eagle Creek following the Commission's February 9, 2018 Study Plan Determination. Subsequent to the filing of the ISR, Eagle Creek held the ISR Meeting with the Commission staff and other relicensing participants on February 13 and 14, 2019 in Monticello, New York. In accordance with 18 CFR §5.15(c)(3) and the schedule provided in the Commission's Scoping Document 2 (issued September 12, 2017), Eagle Creek is filing the attached ISR Meeting Summary with the Commission.

A copy of the ISR Meeting Summary may be obtained electronically through FERC's eLibrary system at: https://elibrary.ferc.gov/idmws/search/fercgensearch.asp under docket numbers P-10482, P-10481, and P-9690. In addition, a copy of the ISR Meeting Summary may be obtained through Eagle Creek's website at:
https://www.eaglecreekre.com/mongaup-river-relicensing

If there are any questions regarding this letter or the ISR Meeting Summary, please do not hesitate to contact Michael Scarzello with Eagle Creek at (973) 998-8400 or Jim Gibson with HDR at (315) 414-2202.

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Enclosure: Initial Study Report Meeting Summary

Swinging Bridge Hydroelectric Project (FERC No. 10482)
Mongaup Falls Hydroelectric Project (FERC No. 10481)
Rio Hydroelectric Project (FERC No. 9690)
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Mongaup Falls Hydroelectric Project (FERC No. 10481)
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Mongaup Falls Hydroelectric Project (FERC No. 10481)
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Mongaup Falls Hydroelectric Project (FERC No. 10481)
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Mongaup Falls Hydroelectric Project (FERC No. 10481)
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Mongaup Falls Hydroelectric Project (FERC No. 10481)
Rio Hydroelectric Project (FERC No. 9690)
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UNITED STATES OF AMERICA

FEDERAL ENERGY REGULATORY COMMISSION

Eagle Creek Renewable Energy	Swinging Bridge Hydroelectric Project (No. 10482)
Application for New License	Mongaup Falls Hydroelectric Project (No. 10481)
	Rio Hydroelectric Project (No. 9690)

AMERICAN WHITEWATER, APPALACHIAN MOUNTAIN CLUB, AND KAYAK AND CANOE CLUB OF NEW YORK COMMENTS AND DISAGREEMENTS WITH WHITEWATER BOATING ASSESSMENT STUDY REPORT AND INITIAL STUDY REPORT MEETING SUMMARY FOR THE MONGAUP RIVER HYDROELECTRIC PROJECTS (FERC PROJECT NOS. P-10482, P-10481, AND P-9690)

American Whitewater (AW), Appalachian Mountain Club (AMC), Kayak and Canoe Club of New York (KCCNY) submit the following comments and disagreements with the Licensee's Whitewater Boating Assessment Study Report[1] and Initial Study Report Meeting Summary.[2] Our organizations previously submitted comments to the Licensee in response to the Draft Whitewater Boating Assessment Study Report[3] as required under FERC's Study Plan Determination and submit these comments due to the Licensee's failure to adequately address our comments previously submitted in response to the draft study report.

Our organizations have actively participated in the relicensing process through attendance at scoping meeting, filing study requests, commenting on study plans and study reports, and participation in the Initial Study Report meeting. We incorporate by reference our previous submissions and request that FERC consider these comments in its evaluation of the results of the Whitewater Boating Assessment Study as part of its NEPA review of project impacts. We separately request that the Licensee amend the study plan pursuant to 18 CFR § 5.15(c)(4) to complete its assessment of whitewater boating opportunities impacted by project operations.

[1] Accession number 20190311-5245
[2] Accession number 20190311-5171
[3] Accession number 20190212-5125

WHITEWATER BOATING ASSESSMENT STUDY REPORT COMMENTS

Under its current license, Eagle Creek is required to schedule generation to provide weekend whitewater releases on 15 days annually between April 15-October 31, alternating between 435 cfs (one turbine) and 870 cfs (two turbines) for four hours every other week during this period. These highly popular scheduled whitewater boating releases draw paddlers from Pennsylvania to Massachusetts and provide paddlers ranging from novice to expert with the opportunity to enjoy a fun, scenic, and predictable whitewater boating opportunity in the largest metropolitan area in the country with more than 20 million people.

Our organizations requested that the Licensee conduct a whitewater boating study on two reaches in the Rio Project boundary: 1) the 1.5-mile bypassed reach (natural river channel between the Rio Dam and the powerhouse tailrace, and, 2) the 3-mile riverine reach between the Rio powerhouse tailrace and the convergence of the Mongaup with the Delaware River. We requested that the Licensee conduct the study according to the Whittaker protocols[4] consisting of the following three levels:

- Level 1 – "desk-top" options: This is the initial information collection and integration phase. It usually focuses on "desk-top" methods using existing information, or limited interviews with people familiar with flows and recreation on the reach.
- Level 2 – limited reconnaissance options: This increases the degree of resolution through limited reconnaissance-based studies, more intensive analysis of existing information, or more extensive interviews.
- Level 3 – intensive studies: This substantially increases the degree of resolution through more intensive studies, which may include multiple flow reconnaissance, flow comparison surveys, or controlled flow studies.

Rather than conducting a robust whitewater boating study as requested by our organizations, the Licensee proposed a more limited study with the following goal:

> The goal the whitewater study is to conduct a Desktop Level 1 analysis as outlined in Whitaker 2005. As set forth in Whitaker 2005, the objectives of the whitewater study are to review and summarize existing documents with information about whitewater boating opportunities and the river's physical characteristics that might make it attractive for

[4] Flows and Recreation: A Guide to Studies for River Professionals by Doug Whittaker, Bo Shelby, and John Gangemi (2005)

> whitewater boating; summarize boating-relevant hydrology and identify existing and potential operational constraints on existing or alternative flow regimes; and collect and organize information about "local knowledge" of the river, recreation opportunities, and potential flow effects. An additional objective of the study is to identify and assess any access locations that are being used to access the Mongaup River for boating below the Rio Project for whitewater boating.

While FERC's study plan determination required only that the Licensee's conduct the more limited Level 1 whitewater boating evaluation, FERC stated that "[u]pon receipt of the ISR, if there is a disagreement among the relicensing participants, the question of whether Eagle Creek Hydro should conduct a Level 2 and/or Level 3 study for either or both reaches would be resolved through the study plan modification process."[5] We contend that the Licensee's more limited Level 1 whitewater boating study fails to provide FERC with sufficient information to complete its NEPA review of project impacts and that the study plan should be modified to require the Licensee to complete a more robust Level 2 and Level 3 on-water assessment of the impact of the Licensee's project operations on whitewater boating opportunity within the project boundary.

1. **The Licensee Level 1 Desktop Analysis Fails to Meet Study Goals**

According to the Whittaker protocols that the Licensee committed to following, a Level 1 desktop analysis requires 1) literature reviews; 2) hydrology summary; and, 3) structured interviews. The literature review conducted by the Licensee involved little more than consulting the American Whitewater website and doing an internet search for "Mongaup whitewater". The report does not reference any effort by the Licensee to contact paddling clubs or knowledgeable individuals to conduct key person interviews, a step specifically referenced in the Whittaker protocols for a Level 1 literature review. The Licensee's cursory literature review does not even include the boatable flow range found on the American Whitewater website, and was limited to an old blog and a couple of YouTube videos of the reach below the powerhouse. With regard to the bypassed reach, the study was unable to locate any literature that characterizes the 1.5-mile natural river channel below the Rio Dam. The Licensee notes that, "Internet searches suggested

[5] Accession No. 20180209-3004

that a book by Dennis Squires might contain information about the whitewater run from Rio Dam to the main powerhouse. Efforts were made to obtain a copy of the book New York Exposed, The Whitewater State, Vol 1. However, the book is out of print and, therefore, a readily reviewable copy could not be located," had the Licensee contacted our organizations, this information could have been readily obtained. A copy of the relevant pages from the Dennis Squires book is included herein.

RIVER:	**Mongaup River**** **(Port Jervis)**
Scenery:	Very good
Class:	II-III
Access:	Over 1 mile in places
Length:	5 miles
Average gradient:	46'/mile
Gauge:	300cfs (1 tube?) is low /500-600cfs is better
Water levels:	The power company usually releases just 1 tube
Best betting time:	Summer releases are listed on: **npmb.com and kccny.com**
Other local runs:	Delaware (I-II, III)**** / Neversink Gorge (III, IV)*****
Boogie time:	95% -- take a pee break or smell the roses
Time to do first run:	2 hours
First known descent:	?
Raft:	No
Ducky:	Yes
Food and gas:	Port Jervis
Camping:	Campground by Barryville
Page in the Gazetteer:	31
County:	Sullivan
Closest river store:	Hudson Valley Pack and Paddle teaches class here

Directions: The take-out is down by the bridge at Routes 97 and 31. To get to the put-in drive north on Route 31 and take a right onto Rio Dam Road. This will take you to the dam and the put-in, below Rio Reservoir.

Description/hazards: There are a couple of things that make this a special place to paddle: the pristine scenery that includes more wild rhododendrons than any other place north of West Virginia, the warm water, summer releases, and the fact that paddlers have had to put so much blood into opening this up, and keeping it that way. As recently as 2002 this river was again closed to paddlers, this time because of "homeland security."

Enjoy the scenery and the water, all the way down to the Delaware River. There are dense woods lining the banks and just enough rocks to keep things interesting. This river is a great training ground and also a great way to beat the heat in the summertime. The Kayak & Canoe Club of New York regularly enjoys this river and works at keeping it open for everybody. The rapids are pretty continuous class II and easy III all the way down to the Delaware. Be sure to save some energy for the Mongaup Wave, which is immediately below the Delaware confluence. It's semi-famous; don't tell me you haven't heard about it (me and my big mouth).

Notes

1_____
2_____
3_____
4_____
5_____

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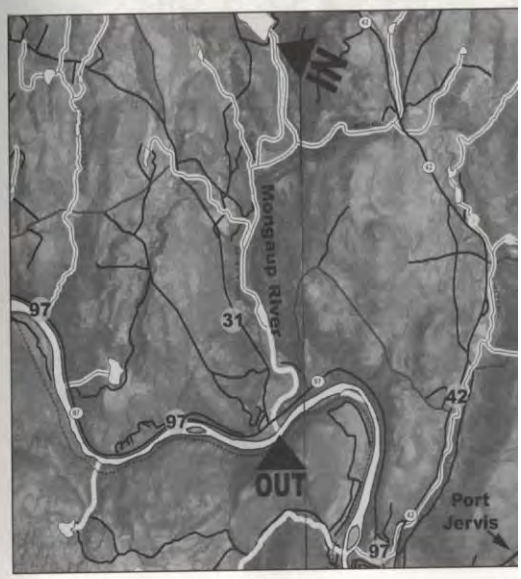

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The draft report also includes a very limited hydrology summary. According to the Licensee, its generational flows during the recreation season between May and October from 8 a.m. and 6 p.m., exceeded 435 cfs 37 percent of the time and exceeded 870 cfs 12 percent of the time. Given that the Licensee inexplicably omits the month of April from its analysis along with

the early evening during the long summer days when it frequently generates, the actual numbers are likely higher. Even with these limitations, the Licensee calculations demonstrate that scheduled generation for whitewater boating represents only 9 percent of generation with at least one turbine and 14 percent of generation with two turbines. Scheduled generation for recreational boating represents only a small fraction of the time that boatable flows are actually available, but the lack of any advanced notification of planned generation limits boating opportunities to primarily scheduled release days.

With regard to the hydrology of the bypassed reach, the study includes a chart showing that between 2007 and 2017, the Rio dam spilled flows into the bypassed reach of at least 500 cfs on 10 occasions, or approximately once a year on average, although in many of those years, there was no spillage at all above that level. Less frequently, the Rio project spilled flows into the bypassed reach on 5 occasions above 1000 cfs during that period, although there have been no such spillage events since Hurricane Irene in 2011 according to the study. It's noteworthy, however, that boatable flows were present in the bypassed reach on 5 occasions in 2018, although the study inexplicably omits this data. An analysis of the hydrology of a comparable unregulated river in the same drainage basin would inform an understanding of how flow alteration due to generation alters the natural hydrology of the Mongaup River in both the bypassed reach and the reach below the Rio powerhouse.

Operational constraints were discussed specific to the bypass reach, but focused almost exclusively on spilling events, failing to discuss whether the existing structures of the minimum flow powerhouse (with a maximum hydraulic capacity of approximately 120 cfs) and the minimum flow discharge valve at the dam (maximum discharge of approximately 130 cfs), could provide an acceptable combined flow for whitewater boating the bypass reach. Further, the study states that "It is not clear from the survey results what the minimum or optimum boating flows are" in the bypass reach for whitewater boating. Additionally, the study report does not discuss or

consider if any operational constraints would be present if facility modifications were undertaken to the existing penstock that would allow larger flows to be released into the bypass reach. The study report also concluded incorrectly that whitewater boating in the bypass reach will "produce little additional whitewater boating opportunity", when in reality survey data demonstrates overwhelming interest and a very high degree of support for providing whitewater flows in the bypass reach among respondents. In addition, the study does not address the benefits to boaters that would result from combining the bypass reach with the lower reach to extend the existing 3-mile whitewater run to 4.5-miles. Finally, the study report does not discuss the operational constraints related to providing additional 2-unit whitewater releases despite finding that 71% of respondents preferred the flow level provided by the 2 unit releases. 2 unit releases only account for 50% of the currently scheduled whitewater release days.

The principal focus of the study report was on the collection and analysis of structured interviews with individual boaters on scheduled release days.[6] While structured interviews provide useful information on user recollections based on past experience, they are fundamentally different than the methodology utilized in a Level 3 on-water controlled flow whitewater boating study. The Licensee's methodology for this study did not ask participants representing river users of differing ability and craft to evaluate a series of flows in a step-wise manner utilizing both post-run and comparative survey instruments. That process is designed to identify minimum acceptable and optimal boating flows among other factors including river access. The current study references a prior boating study completed in 1990 in which participants evaluated both a 1-turbine and 2-turbine generation flow. The prior flow study found that both flows provided a valuable boating experience. Conditions have changed since 1990, however, due to major flood events such as Hurricane Irene and changes in boats design.

Beyond the general conclusion that both 1-turbine and 2-turbine generation flows provide

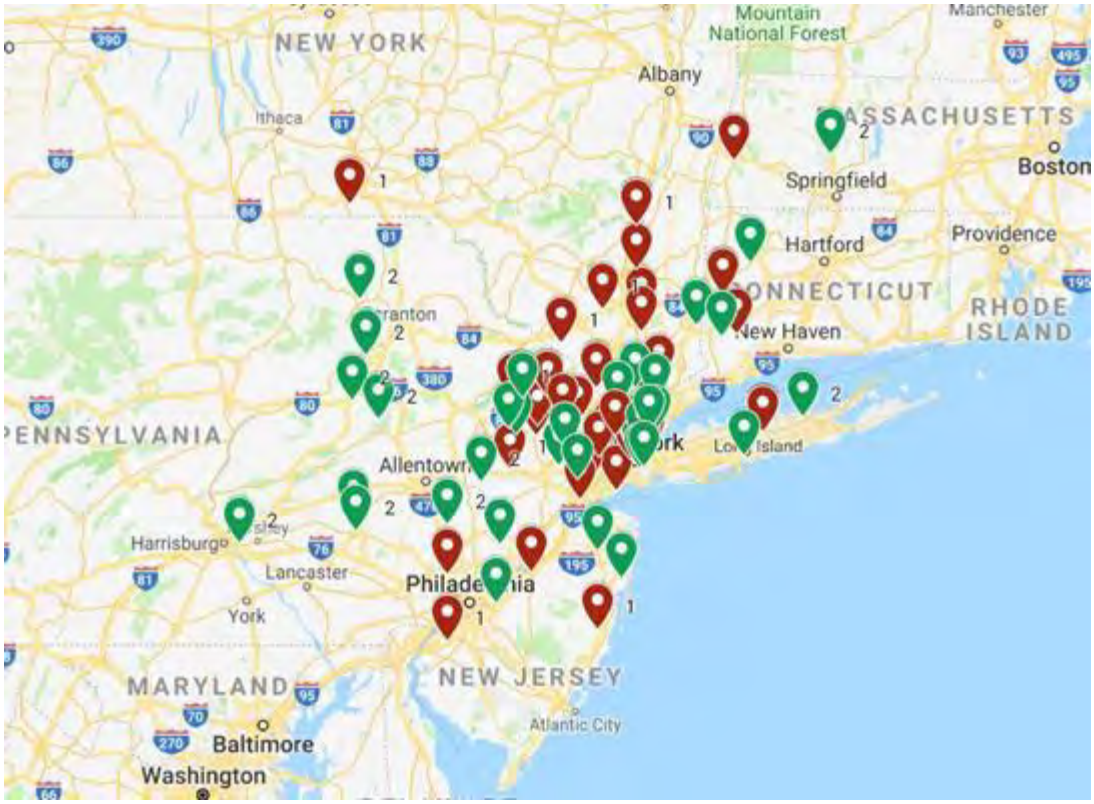
[6] Two surveys were completed on April 21, 2018, an unscheduled release date. The remainder of the surveys were completed on scheduled release dates.

a valuable whitewater boating experience, the current study attempts to draw a broader conclusion regarding minimum acceptable and optimal boating flows without evaluating flows either less than, in between, or greater than the generation flows. In addition, the study was not designed to collect post-run surveys from the same participants on their assessment of different flows, and wasn't designed as a comparative evaluation of the different flows as is typical in an on-water flow assessment.

Questions relating to the bypassed reach yielded little useful information about flow level preferences. Given the infrequency of spill into the bypassed reach at boatable flows, the passage of time since even those respondents had boated the reach, and uncertainty about flow levels, the survey cannot be utilized as a basis for determining minimum acceptable and optimal boating levels in the bypassed reach, and no prior boating study was conducted on this reach.

The study principally analyzed the responses from 104 surveys by whitewater boaters primarily at the Rio powerhouse as boaters were putting on the water. Due to the length of the survey, 8 of the 104 surveys were partially or totally incomplete including nearly all surveys collected on October 13 when the project was spilling into the bypassed reach. The number of incomplete surveys and the lack of responses and brevity of responses on others suggests that the length and timing that the surveys were conducted limited the amount of data that could be collected using the survey instrument. Nearly all surveys were conducted at the put-in rather than at the take-out, so the surveys generally reflect the participant's anticipated experience rather than their actual experience and the actual flow levels varied due to generation, spill, and other inflow.

According to the study, survey participants drove an average of 97 miles to boat at the Mongaup. The map below depicts the distance that participants traveled, with the red flags representing those traveling for a 1-turbine release and the green flags representing those traveling for a 2-turbine release.



The distance traveled by participants in the study reflects only those surveys rather than the total number of boaters utilizing the river. Also, since only some of those attending the release were surveyed and the Licensee made no attempt to contact paddling clubs or conduct an online survey, it is unknown whether other boaters would have traveled a further distance if a consecutive 2-day release was scheduled. Consecutive day releases would also have positive economic impacts, as greater numbers of boaters would travel to the region and potentially a river festival could be scheduled drawing 500 or more participants. The data included in the study, however, shows that the Mongaup River is considered a regional boating resource.

2. The Rio Powerhouse Reach is a high quality whitewater boating resource

Survey participants agreed and it is universally understood that the 2-turbine releases have a higher level of difficulty than the 1-turbine releases with the difficulty increasing from Class II to Class III. The Licensee surveyed a relatively equal number of participants at 1-turbine and 2-turbine releases, and 92 percent of respondents identified themselves as having either intermediate, advanced, or expert boating skills. Respondents overwhelming agreed (90%) that

the 1-turbine flow level was the minimum acceptable boating flow and the 2-turbine flow was the optimal flow level (71%). Since the study did not indicate the total number of boaters attending the release on each survey date or the skill level of the entire boating group, it's unclear whether the responses are representative. Assuming the participants were randomly selected, we assume then that providing an equal number of 1-turbine and 2-turbine releases provides a less than optimal boating experience for the vast majority of participants. Although there is insufficient data, we assume that boaters identifying themselves as either novice or beginner may prefer a 1-turbine release and that the majority of boaters with higher skill levels prefer a 2-turbine release.

Boater perceptions of the lower Mongaup reach clearly show that that the reach was considered a high-quality boating resource by all study participants. While both the 1-turbine and 2-turbine releases received high ratings, boaters expressed a preference for the 2-turbine releases. These respondents are consistent with the minimum acceptable and optimal flow responses.

Survey responses to questions #3 and #20 dealing with the adequacy of the release schedule and satisfaction with scheduled releases yielded inconsistent responses, and the ambiguity in the wording of these questions appears to have caused confusion among participants. Whether responses indicated satisfaction with the frequency, magnitude, timing, or duration of releases is unclear from the wording of these questions. It would have been useful for the Licensee to inquire as to whether boaters preferred a different allocation of one-unit and two-unit releases, and whether additional releases at either level are desired. The results would have enabled the Licensee to evaluate demand by skill level and craft based on the total number of boaters utilizing the reach, and determine whether participants would boat the reach more frequently if there was an increase in the frequency or magnitude of scheduled releases.

While most respondents expressed satisfaction with current releases, approximately 13 respondents expressed a desire for more releases in response to open ended questions. Directly asking participants whether they would like to see more releases or higher flows would have

yielded more useful responses, but the data supports the conclusion that a significant number of boaters would like to see more releases, as two-thirds of respondents have boated on the reach at least 10 times previously.

With regard to access issues at the Mongaup, the most frequently mentioned open ended comment by 8 commenters was that there was a need for improved parking. As part of the Licensee's Recreation Use and Needs Assessment, the Licensee should evaluate whether existing put-in and take-out locations are in need of repair or expansion in order to meet current and future recreation demand.

In response to questions relating to other regional boating resources, respondents identified a number of other rivers, most frequently mentioning the Lehigh and the Esopus. While other rivers were mentioned, none of the others mentioned have scheduled releases, a highly valued attribute of the Mongaup. Without scheduled releases, flows are often too low to boat, particularly during the warmer summer months when boating demand is highest, and boatable flows are unpredictable on those rivers. While the Esopus does have scheduled releases on a few weekends annually, those releases do not occur during the peak months of July and August.

The only river comparable to the Mongaup in the metropolitan area is the Lehigh, and releases are scheduled there by the Army Corps of Engineers during the boating season. Located near White Haven, PA, the Lehigh draws paddlers primarily from the New York City, New Jersey and Pennsylvania areas, but is a longer drive for those traveling from north of the city. Releases are scheduled on alternating weekends but the timing of releases are not coordinated with the Mongaup release schedule, leading to competing releases at times.

Overall, 98 percent of respondents rated the Mongaup either as better than most or similar to most other paddling options, with 58 percent of those regarding the Mongaup as better. These responses, however, did not take into account the issue of scheduling. Open ended responses by participants shows that the Mongaup River is a highly regarded regional boating resources that is

accessible to a large population area, provides a high-quality boating experience to a broad range of paddler abilities, is predictable, and is located in a scenic setting with high aesthetic value, and that there is significant recreation demand. Open-ended responses by survey participants demonstrate the value that paddlers place on the boating opportunities on the Mongaup, as shown by a sample of responses to question #50:

- fun class II+ run that is close and accessible/consistent
- interesting, lots of different features, parking can be crowded in summertime
- another fun river. Would like # to see if they are releasing ahead of time
- fun rapids, good for ability, scenery
- pretty, easily accessible, good features
- variety and scenic views in area
- reliable benchmark for taking many skill level and people on
- reliable, more releases always good
- more access, more reliable, not as challenging, reliability, no dangerous things, very appreciative of regularly scheduled releases, could make bypass/tailrace to playspot
- not much local stuff except for occasional release
- unspoiled beauty
- love the river, no flatwater, great features

These responses demonstrate that boaters place a high value on the Mongaup because there are few other whitewater runs in the area, especially during the summer. Mongaup boater's value scheduled and predictable paddling opportunities, although on busy release days, access points are crowded. Boaters find this reach enjoyable, and value its consistent features. Placing these open-ended responses in a word cloud graphically demonstrates the value that boaters place on this reach.

3. **The Whitewater Boating Assessment Report failed to properly evaluate the need for further study of whitewater boating in the Rio Dam bypassed reach**

The most surprising aspect of the Whitewater Boating Assessment Study Report was the finding that 26 percent of boaters surveyed had previously boated the bypassed reach between the Rio Dam and powerhouse. Given the infrequency with which the project spills over the flashboards flows in excess of the 100 cfs minimum flows, the number of those previously boating this reach is striking. The number of those having previously boated this reach, coupled with an additional 6 respondents who indicated a desire to boat this section of the river if scheduled releases were provided, indicates very strong interest in the bypassed reach. Spilling flows from the dam, rather than through the powerhouse tailrace, would extend the length of the reach by 50 percent from a 3-mile reach to a 4.5-mile reach from the dam down to the Delaware.

The study finds that virtually "no information was found regarding whitewater boating conditions and opportunity on the bypassed reach between the Rio Dam and Rio Main Powerhouse." The study finds that the gradient of the bypassed reach drops 84 feet over 1.5 miles, or approximately 56 feet per mile. This gradient is similar to that of the lower Mongaup. Based on the high number of people having opportunistically boated this reach, and the fact that

those having run this reach at unknown levels uniformly rated the quality of the run favorably, there is ample data showing that the upper Mongaup is a high-quality regional boating resource that would enhance the overall quality of the boating opportunity on the river. Several respondents indicated a desire for scheduled releases in the bypassed reach. Also noteworthy are the responses from those who had not boated on the bypassed reach. Most commonly, survey respondents mentioned as reasons for not running the reach as not knowing anything about the reach, the lack of sufficient flows and scheduled releases, and poor access.

With regard to access in the bypassed reach, 43 percent of those responding stated that access was less than adequate, citing the steep embankment and limited parking as principal concerns. The Licensee should include in its Recreation Use and Needs Assessment an evaluation of the adequacy of these facilities, including ADA accessibility, and should propose appropriate mitigation measures to remedy access issues.

While survey responses clearly show demand for scheduled boating releases in the bypassed reach based on the experience of a large number of boaters, the lack of information on specific flows that correlate to past boating experience makes it impossible to identify the minimum acceptable and optimal boating flows on the reach. Unlike the lower Mongaup reach, there was no prior whitewater boating study on the upper Mongaup reach on which to base a determination of current minimum acceptable and optimal boating flows. To suggest otherwise is completely speculative.

At times other than when the Rio Dam is spilling, the Licensee releases 100 cfs into the bypassed reach, creating wholly unnatural flow conditions that lack natural flow variability beneficial to aquatic habitat. Variable flows not only provide recreational boating opportunity, they also improve sediment transport, dissolved oxygen, water temperature, and aquatic habitat.

In its Revised Study Plan, the Licensee states the following:

> AW/AMC/KCCNY requested a controlled flow whitewater boating assessment, including multiple on-water flow assessments. The Licensee is not proposing to conduct an on-water

> controlled flow evaluation at this time as the need for such is dependent on the results of this study plan assessment. This phased approach to the study is consistent with Whittaker 2005.

In *Flows and Recreation: A Guide to Studies for River Professionals,* Whittaker *et al.* specify the protocols that the Licensee committed to following in its Whitewater Boating Assessment Study. The protocols explicitly discuss the preparation of the Level 1 study report and requires the following analysis:

> One output of the report should be explicit decisions about whether additional study is necessary for each opportunity and reach. While the utility and consultants typically make the case for these decisions in their report, review by agencies and stakeholders (via working groups) can make those decisions more collaborative, or allow early identification of disputes. This should limit additional information requests later in the process. Ultimately, the decision is whether Level 1 information is sufficient, or if additional study is necessary. This decision rests on answers to several questions:
>
> - Are there flow-dependent recreation opportunities on the river segments?
> - Are flow-dependent opportunities affected by project operations?
> - Are flow-dependent recreation opportunities "important" relative to other resources or foregone power generation? If certain recreation opportunities will not be considered when determining project operation decisions (e.g., if agencies and stakeholders agree that flow releases will be primarily driven by biological needs for an endangered species), more detailed information about flows may be unnecessary, and Level 1 information may be sufficient (assuming it documents stakeholder and agency agreement about this evaluation).
> - Does Level 1 information precisely define flow ranges and potential project effects for each flow-dependent opportunity? For example, flow ranges for a commonly boated whitewater reach may be sufficiently well-known and agreed upon, and there may be no need for additional study.
>
> If none of these questions are answered affirmatively, Level 1 information is probably not sufficient, and more intensive study (Level 2 or 3) may be necessary

In response to comments by AW, AMC and KCCNY, the licensee has revised its draft study report to include a discussion of whether a Level 2 or Level 3 on-water boating study is warranted. With regard to the whitewater section below the powerhouse, the report acknowledges that whitewater boating on this reach is a flow-dependent activity affected by project operations that is important relative to other resources or foregone generation. While the report claims that the Level 1 information precisely defines flow ranges and potential project effect, it would be more accurate to say that generation with one turbine coupled with the current minimum flow results in a

minimum acceptable boating flow, and that generation with two turbines provides a more optimal flow. There is no basis for concluding that the survey determined precise flow ranges beyond user impressions of one and two turbine releases.

With regard to the bypassed reach, the report acknowledges that whitewater boating on this section of the river is a flow dependent opportunity that is available when spill is added to the 100 cfs minimum flow at times when the reservoir is at its maximum elevation and inflows exceed the hydraulic capacity of the project. Whitewater boating opportunities are directly impacted by project operations that store and divert flows of either 435 or 870 cfs into the penstock leading to the powerhouse, depriving the natural river channel of all but minimum flows including naturally variable flow that would otherwise be available for whitewater boating.

In terms of whether the whitewater boating opportunity is important relative to other resources or foregone generation, the report states that releases will result in lost generation and would provide little additional whitewater boating opportunity beyond what is available in the lower reach. While we acknowledge that spill into bypassed reaches for whitewater boating results in lost generation, scores of other hydropower projects across the nation including numerous projects in the northeast region require spill into bypassed reaches in order to provide scheduled whitewater boating opportunities. The report's conclusion that requiring spill into the bypassed reach would provide little additional whitewater boating opportunity is pure speculation and unsupported by any data. To the contrary, requiring the release of boatable flows into the bypassed reach would lengthen the whitewater boating reach by 50 percent from 3 to 4.5 miles when added to the lower reach assuming that the flows in the upper reach were within the same boatable flow range. Given that the study did not ask whether the increase in length by 50 percent would enhance boater's experience, the report's conclusion that the additional whitewater boating opportunity is unimportant is merely self-serving and lacks credence.

As to whether the Level 1 information precisely defines flow ranges and potential project

effects for each flow dependent opportunity, the report acknowledges that "[i]t is not clear from the survey results what the minimum or optimum boating flows are." While the report speculates that the reach is boatable at flows in excess of 400-500 cfs, there is no actual data supporting this suggestion other than the gradient of the reach in comparison to the lower reach. If accurate, this flow would confirm that the quality of the whitewater boating opportunity on the Mongaup would be enhanced by extending the length of the run by 50 percent with the requirement of additional flow into the bypassed reach.

Importance of spill into the bypassed reach coupled with the inability to precisely define flow ranges supports the need for a Level 2 and Level 3 on-water flow study of the bypassed reach. The Licensee has the capacity to release flows totaling 250 cfs through its minimum flow powerhouse and discharge valve. Additional spill can be provided through spilling over flashboards in order to evaluate a range of flows into the bypassed reach and the potential for lengthening the whitewater boating run when combined with the lower reach below the powerhouse. While the report raises public safety concerns about the risk of failure during spill events, the flashboards are designed for failure when they are topped by 5 feet of water. The report has not provided any calculation of the flow over the flashboards required to provide a boatable flow in the bypassed reach; however, we calculate that a spill of six inches to one foot would be sufficient to provide flows ranging from 500 cfs to 1000 cfs when combined with minimum flow powerhouse and discharge valve. Using $Q = C_e\ (L + k_b)\ (H + 0.003)^{3/2}$ formula, we calculated the necessary flow assuming a width of 240 feet and a height of 101 feet.[7] While the Licensee may be able to more precisely calculate flow into the bypassed reach from spill, it appears that the Licensee has the capacity to spill sufficient flow into the bypassed reach for a Level 3 on-water study without risk of flashboard failure.

[7] http://onlinecalc.sdsu.edu/onlinerectangularweir.php

INITIAL STUDY REPORT MEETING SUMMARY COMMENTS

The Initial Study Report Meeting Summary in section 2.3 states, "...during the study, they did not find any boaters in the Rio bypassed reach." AW, AMC, and KCCNY disagree with this statement. The applicant relied primarily on user surveys, of which 2% of conducted user surveys indicated that the respondent was running or planning to run the Rio bypass reach on the day of the survey according to chart 5.3-5, indicating that the applicant had the opportunity to survey at least 2 individuals that had or would be boating in the Rio bypass reach, but chose not to. This is contrary to the statement that they did not find any boaters in the Rio bypass reach during the study season.

In fact, during the 2018 study season, spilling flows of greater than 500 cfs were present in the bypass reach for 5 days, including on October 13, 2018 when surveys were being taken by the applicant. The meeting summary should reflect that the applicant had the opportunity to assess flow preferences and other important information from users using the approved methodology but chose not to collect this data. The summary should also note that on all but one day in which it collected survey responses, the only flow in the bypassed reach was the minimum flow of 100 cfs, a level well below the likely minimum boatable flow.

CONCLUSION

The Whitewater Boating Assessment Study Report provides useful information that demonstrates that the lower Mongaup River from the Rio powerhouse to the confluence with the Delaware River provides large numbers of whitewater boaters with a highly valued boating experience. Generation flows of 435 cfs (1-turbine) provide a minimum acceptable boating flow, while a flow of 870 cfs (2-turbines) provided an optimal boating experience based on boater experience at these two flow levels. While both flow levels are acceptable to boaters of varying skill levels, the vast majority of boaters had intermediate to expert skills and preferred a 2-turbine

release.

With regard to the lower Mongaup, a number of questions remain unanswered, including but not limited to the following: 1) What is the impact of current and alternative modes of project operation on whitewater boating opportunity; 2) whether there is demand for additional 2-turbine releases; 3) whether consecutive day releases would attract a greater number of participants to the river; and, 4) whether access improvements are needed to provide sufficient parking and other access needs. It may be possible for the Licensee to answer these questions through follow-up surveys with paddling clubs or focus groups. Alternately, this information could be obtained through a Level 3 on-water controlled flow study.

With regard to the bypassed reach, the data collected did not answer fundamental questions that would allow FERC to identify whether project operations that eliminate most boatable flows in the 1.5-mile bypassed reach adversely impact on whitewater boating opportunity boat in that reach and on the entire 4.5-mile reach as a whole. Answers to these questions depend on completing a Level 3 on-water controlled flow study. A Level 3 study would address unanswered questions including but not limited to the following: 1) What is the level of difficulty of the bypassed reach at variable flows; 2) what are the minimum acceptable and optimal flows in the bypassed reach; 3) what are the noteworthy features of the bypassed reach; 4) what access improvements would improve the whitewater boating experience; and, 5) how important are scheduled releases in the bypassed reach to your whitewater boating experience on the Mongaup River. A determination that a Level 2 and Level 3 on-water controlled flow study of the bypassed reach is plainly warranted. In addition, the study should assess whether modifications to existing facilities are feasible in order to release variable flows into the bypassed reach that would benefit both recreation and aquatic habitat.

Respectfully Submitted,

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UNITED STATES OF AMERICAN

FEDERAL REGULATOY COMMISSION

Eagle Creek Renewable Energy Application for New License	Swinging Bridge Hydroelectric Project (No. 10482) Mongaup Falls Hydroelectric Project (No. 10481) Rio Hydroelectric Project (No. 9690)

CERTIFICATE OF SERVICE

I hereby certify that I have this day served the foregoing document upon each person designated on the official service list compiled by the Secretary in this proceeding.

Dated this 10th day of April 2019.

Carla Miner

Carla Miner
Stewardship Assistant
American Whitewater

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UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Eagle Creek Renewable Energy	Swinging Bridge Hydroelectric Project No. 10482
Application for New License	Mongaup Falls Hydroelectric Project No. 10481
	Rio Hydroelectric Project No. 9690

AMERICAN WHITEWATER, APPALACHIAN MOUNTAIN CLUB, AND KAYAK AND CANOE CLUB OF NEW YORK REQUEST TO MODIFY WHITEWATER BOATING ASSESSMENT STUDY FOR THE MONGAUP RIVER HYDROELECTRIC PROJECTS (FERC PROJECT NOS. P-10482, P-10481, AND P-9690)

American Whitewater (AW), Appalachian Mountain Club (AMC), Kayak and Canoe Club of New York (KCCNY) submit the following request to modify the Whitewater Boating Assessment Study for the Rio Hydroelectric Project (FERC No. 9690). Our organizations have actively participated in the relicensing process through attendance at scoping meetings, filing study requests, commenting on study plans and study reports, and filing comments in response to the Whitewater Boating Assessment Study Report. We incorporate those comments by reference in our study modification request and request that FERC require the Licensee to amend the study plan pursuant to 18 CFR § 5.15(c)(4) to complete its assessment of whitewater boating opportunities impacted by project operations.

AW, AMC and KCCNY have good cause to request a modification of the approved study plan pursuant to 18 CFR § 5.15. Related to 18 CFR § 5.15(d)(1) as the applicant has not completed the Whitewater Boating Assessment Study in a manner that addresses the objectives and questions raised in the Revised Study Plan as identified herein. Related to 18 CFR § 5.15(d)(2), the Whitewater Boating Assessment Study failed to capture important data related from users boating in the bypass reach during a spilling event, and other data collected related to the whitewater boating conditions and whitewater boating flow preferences, was inconclusive. Pursuant to 18 CFR § 5.15(c)(4), AW, AMC and KCCNY request modifications to the Whitewater Boating Assessment Study.

1) There are no material changes in the law or regulations applicable to the information request.

2) The goals and objectives of any approved study could not be met with the approved study methodology. In its Revised Study Plan, the Licensee states that the Goal of the Whitewater Boating Assessment Study is as follows:

> The goal the whitewater study is to conduct a Desktop Level 1 analysis as outlined in Whitaker 2005. As set forth in Whitaker 2005, the objectives of the whitewater study are to review and summarize existing documents with information about whitewater boating opportunities and the river's physical characteristics that might make it attractive for whitewater boating; summarize boating-relevant hydrology and identify existing and potential operational constraints on existing or alternative flow regimes; and collect and organize information about "local knowledge" of the river, recreation opportunities, and potential flow effects. An additional objective of the study is to identify and assess any access locations that are being used to access the Mongaup River for boating below the Rio Project for whitewater boating.

The Revised Study Plan sets forth in section 12.7.5 specifies the methodology that the Licensee will follow in preparing a study report in which it will 1) Describe whitewater boating conditions in both the bypass reach and in the Mongaup River downstream of the Rio powerhouse; 2) Identify recreation boating opportunities in the two reaches, suggest whether there are flow-dependent attributes for each, and will identify and assess operational constraints on releasing flows for whitewater boating in each reach; and, 3) Make recommendations as to the need for a limited reconnaissance whitewater assessment (i.e., a Level 2 assessment as set forth in Whittaker 2005) and/or more intensive study options (i.e., a Level 3 assessment as set forth in Whittaker 2005) such as an on-water controlled flow evaluation.

AW, AMC, and KCCNY contend that the Licensee's study report fails to adequately describe the whitewater boating conditions in the bypassed reach. Whitewater boating conditions refer most frequently to difficulty of the reach at various flow levels and the flow preferences of boaters of varying skill levels utilizing various water craft. In order to adequately describe these conditions, FERC required that the Licensee include questions in its structured interviews to elicit information on minimum acceptable or

optimal boating flows. Based on the survey responses, the applicant notes in section 6.0 of the Whitewater Boating Assessment Study Report the following:

> Boaters that rated the difficulty of the Rio bypassed reach generally rated it Class II-III. One boater rated the Rio bypass reach as Class III-IV at "flood stage". From the responses received, respondents did not provide enough information about their experience to determine the flows associated with the classification ratings provided by the respondents.

The study report acknowledges that survey respondents were unable to precisely identify minimum acceptable or optimal boating flows in the bypassed reach, stating in its responses to comments received in response to the draft study report, "It is not clear from the survey results what the minimum or optimum boating flows are." Notwithstanding the inability of the study to correlate the survey responses to flows, it somehow concludes that responses suggest that the reach is boatable at flows in excess of 400-500 cfs.

Most respondents suggested that "unit flow" (e.g., 1 unit) was both a minimum and optimal flow, which the applicant notes suggests confusion around either the question or the inability of whitewater boaters to understand the actual flows present in the bypass reach. Without clearer understanding of difficulty and flow preferences, the applicant has not adequately described the whitewater boating conditions of the bypass.

While survey responses clearly show demand for scheduled boating releases in the bypassed reach based on the experience of a large number of boaters, the lack of precise information on specific flows that correlate to past boating experience makes it impossible to identify the minimum acceptable and optimal boating flows on the reach. Unlike the lower Mongaup reach, there was no prior whitewater boating study on the upper Mongaup reach on which to base a determination of current minimum acceptable and optimal boating flows. To suggest otherwise is completely speculative.

3) Our organizations previously requested that the Licensee conduct an on-water whitewater boating study following the Whittaker protocols on the Mongaup River on two reaches below in the Rio Project boundary: a) the 1.5-mile bypassed reach (natural river channel between the Rio Dam and the powerhouse tailrace, and, b) the 3-mile riverine reach between the Rio powerhouse tailrace and the convergence of the

Mongaup with the Delaware River. The Whittaker protocols[1] consist of the following three levels:

- Level 1 – "desk-top" options: This is the initial information collection and integration phase. It usually focuses on "desk-top" methods using existing information, or limited interviews with people familiar with flows and recreation on the reach.
- Level 2 – limited reconnaissance options: This increases the degree of resolution through limited reconnaissance-based studies, more intensive analysis of existing information, or more extensive interviews.
- Level 3 – intensive studies: This substantially increases the degree of resolution through more intensive studies, which may include multiple flow reconnaissance, flow comparison surveys, or controlled flow studies.

FERC's Study Plan Determination states that "[u]pon receipt of the ISR, if there is a disagreement among the relicensing participants, the question of whether Eagle Creek Hydro should conduct a Level 2 and/or Level 3 study for either or both reaches would be resolved through the study plan modification process."

4) Based on the results of the Licensee's Whitewater Boating Assessment, significant new information material to the study objectives has become available. According to the Whittaker protocols, the study was intended to answer the following questions:

- Are there flow-dependent recreation opportunities on the river segments?
- Are flow-dependent opportunities affected by project operations?
- Are flow-dependent recreation opportunities "important" relative to other resources or foregone power generation? If certain recreation opportunities will not be considered when determining project operation decisions (e.g., if agencies and stakeholders agree that flow releases will be primarily driven by biological needs for an endangered species), more detailed information about flows may be unnecessary, and Level 1 information may be sufficient (assuming it documents stakeholder and agency agreement about this evaluation).
- Does Level 1 information precisely define flow ranges and potential project effects for each flow-dependent opportunity? For example, flow ranges for a commonly boated whitewater reach may be sufficiently well-known and agreed upon, and there may be no need for additional study.

If none of these questions are answered affirmatively, Level 1 information is probably not sufficient, and more intensive study (Level 2 or 3) may be necessary.

Information collected during the Level 1 study shows that boaters with knowledge of the bypassed reach regarded the reach as providing an important recreation opportunity; however, boaters were unable

[1] Flows and Recreation: A Guide to Studies for River Professionals by Doug Whittaker, Bo Shelby, and John Gangemi (2005)

to precisely identify the minimum acceptable and optimal boating flows in the reach. This information was unknown at the time that the Licensee filed its Revised Study Plan. This new information, AW. AMC and KCCNY are asking that FERC require the Licensee to complete a Level 2 and Level 3 assessment of the bypassed reach, a study modification contemplated by FERC in its Study Plan determination.

5) The new study request satisfies the study criteria in § 5.9(b).

(1) Describe the goals and objectives of each study proposal and the information to be obtained.

The goal of these whitewater flow studies is to assess the presence, quality, access needs, flow information needs, and preferred flow ranges for river-based boating resources in a stepwise manner. The information to be obtained can be generally characterized as quantitative and qualitative descriptions of:

- Assess the effects of a range of optimal and acceptable flows on whitewater recreation opportunities for whitewater paddling in the bypassed reach below the Rio Dam;
- The frequency, timing, duration and predictability of optimal and acceptable paddling flows under current, proposed, and alternative modes of operation;
- The location, challenge, and other recreational attributes associated with specific rapids and other river features;
- The flow information needs of whitewater boating and the current and potential flow information distribution system.

Thus, the information to be obtained for the whitewater paddling study is a combination of user-generated flow preferences and other data, information on current and proposed operation (e.g. discharges), geographic information and basic recreational information.

(2) If applicable, explain the relevant resource management goals of the agencies or Indian tribes with jurisdiction over the resource to be studied.

The requester is not a resource agency.

(3) If the requester is not a resource agency, explain any relevant public interest considerations in regard to the proposed study.

The Mongaup River offers the public a high quality whitewater boating resource when flow conditions are suitable. Conducting the necessary studies and implementing measures to ensure that the public has access to high quality outdoor recreational resources is in the public interest. It is widely accepted that outdoor recreation has significant benefits to participants including health, well-being, and quality of life. Outdoor recreation also has proven economic benefits for communities located near recreational resources.

Expanding recreation opportunities on the Mongaup River has the potential to offer the region additional economic benefits. FERC has stated in "A Guide to Understanding and Applying the Integrated Licensing Process Study Criteria" (March 2012) that *"to fully evaluate the project's effect on whitewater*

recreation opportunities and to balance potential enhancement opportunities with their cost, a controlled-flow whitewater boating study is relevant to Commission's public interest determination."

The Licensee provides 15 scheduled whitewater releases from the Rio powerhouse on a bi-weekly basis between April 15 – October 31 ranging from 435 cfs to 870 cfs in accordance with its FERC License as amended. These scheduled releases attract a large number of boaters from throughout the northeast and mid-Atlantic regions. There are currently no scheduled releases in the bypassed reach between the Rio Dam and powerhouse. Responses to the Level 1 whitewater boating study demonstrate that the bypassed reach has the potential to provide a high quality boating resource when sufficient flows are provided.

(4) Describe existing information concerning the subject of the study proposal, and need for additional information.

Paddlers from throughout the Northeast and mid-Atlantic region highly value whitewater boating below the Rio Dam powerhouse tailrace. The Mongaup is easily accessible to large numbers of kayakers and canoeists living in New York and Connecticut, and is a frequent destination for paddling trips organized by the Kayak and Canoe Club of New York and the Appalachian Mountain Club. Offering a steady supply of Class II/III rapids, the reach is important to those looking to develop their paddling skills and enjoy a scenic and fun advanced beginner/lower intermediate boating experience.

While the Lower Mongaup from the tailrace to the confluence with the Delaware is well known at flows of 535 cfs (435 cfs generation plus 100 cfs min flow) and 970 cfs (870 cfs generation plus 100 cfs min flow), the bypassed reach from the Rio Dam to the tailrace is largely unknown. Anecdotal accounts by the handful of boaters who have paddled this reach confirm that under certain unknown flow conditions, this reach can provide a quality whitewater boating experience. During the Level 1 whitewater boating study, the Licensee was able to identify a significant number of boaters who had previously paddles the reach, but was unable to identify the minimum acceptable and optimal boating flows. When combined with generation flows on the Lower Mongaup, this 4.5-mile reach is of exceptional quality. Adding flows into to the bypassed reach at the Rio Dam can provide a range of flows that are suitable for evaluation in a controlled-flow whitewater boating study.

Conducting a controlled-flow study will provide FERC with additional information for its NEPA analysis with regard to the frequency, timing, and velocity of scheduled whitewater releases in any future license, and in particular, on the virtually unknown and utilized bypassed reach below the Rio Dam.

(5) Explain any nexus between Project operations and effects (direct, indirect, and/or cumulative) on the resource to be studied, and how the study results would inform the development of

license requirements.

The Mongaup River Projects control flows in the Mongaup River from Swinging Bridge to Rio by fluctuating water levels in the impoundments and storage reservoirs. The projects operate in a peaking mode, altering the natural flow regime. At the Mongaup Falls and the Rio projects, flows are diverted into penstocks leading to powerhouses, dramatically reducing the flows available in the natural river channel or bypassed reaches, eliminating naturally variable flows and damaging aquatic habitat. The diversion of natural flows through hydropower operations alters the landscape in the natural river channel, and reduces recreational opportunities that would otherwise be available.

In the case of the Rio project, a 1.5-mile stretch of the river below the dam, project operations eliminate boating opportunities immediately below the dam when natural high flow events and inflows would provide suitable conditions. An analysis of the Licensee's operations would demonstrate the extent to which the Licensee can provide spill into the bypassed reach in order to provide recreational boating opportunity and natural flow variability. The Licensee should also explore any alterations to existing equipment and facilities that would enhance its ability to provide controlled flows into project waters.

(6) Explain how any proposed study methodology (including any preferred data collection and analysis techniques, or objectively quantified information, and a schedule including appropriate field season(s) and the duration) is consistent with generally accepted practice in the scientific community or, as appropriate, considers relevant tribal values and knowledge.

The study we request in the bypassed reach at the Rio Project follow the standard Level 2 and Level 3 methodology as described in Whittaker, et. al. (2005). This methodology is designed to assess the presence, quality, and preferred flow ranges for river-based boating resources in a step-wise manner. The process steps generally require 1) on-land feasibility assessment, 2) on-water single flow assessment, 3) on-water multiple flow assessment. Because the quality of the resource has not been fully analyzed with current metrics, we request that multiple on-water flow assessments be conducted. The whitewater boating study methodology we have requested has been used on dozens of other FERC regulated reaches.

Based on the responses from surveys conducted during the Level 1 assessment, the Licensee should evaluate flows in a step-wise manner beginning with the 250 cfs that it is capable of releasing into the bypassed reach utilizing existing equipment. Additional flows should be evaluated based on the Licensee's ability to provide controlled spillage into the bypass reach.

(7) Describe considerations of level of effort and cost, as applicable, and why any proposed alternative studies would not be sufficient to meet the stated information needs.

The additional work required to complete a Level 3 on-water whitewater boating study is limited in

scope since the Licensee has already collected significant information through its Level 1 whitewater boating assessment. The Licensee will need identify a suitable group of whitewater boaters in consultation with stakeholders who will participate in the on-water assessment. At the conclusion of the on-water assessment, the Licensee will need to revise its Whitewater Boating Assessment Study Report with an analysis of the post-run and comparative evaluation surveys completed by study participants. Given the collaborative approach sought by the paddling community, including in-kind contributions of time and expertise, a consultant should be able to complete this study on behalf of the licensee for a very reasonable cost. We estimate that the cost of conducting the controlled flow whitewater boating study will be approximately $30,000, including the field work and final report preparation.

Sincerely,

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UNITED STATES OF AMERICAN

FEDERAL REGULATOY COMMISSION

Eagle Creek Renewable Energy Application for New License	Swinging Bridge Hydroelectric Project (No. 10482) Mongaup Falls Hydroelectric Project (No. 10481) Rio Hydroelectric Project (No. 9690)

CERTIFICATE OF SERVICE

I hereby certify that I have this day served the foregoing document upon each person designated on the official service list compiled by the Secretary in this proceeding.

Dated this 10th day of April 2019.

Carla Miner

Carla Miner
Stewardship Assistant
American Whitewater

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LUMBERLAND, TOWN OF	john kelly POB 384 ROCK HILL, NEW YORK 12775 UNITED STATES office@johnrkelly.com	Nadia Rajsz supervisornadia@gmail.com
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Mirant NY-Gen LLC		**Elliot Neri Facilities Manager Mirant NY-Gen LLC Bowline Generating Station 140 Samsondale Ave West Haverstraw, NEW YORK 109931229 Rockland
Mirant NY-Gen LLC	**Algird White Contact/Addr No Longer Valid Couch White, LLP UNITED STATES	**Robert Dowd Contact/Addr No Longer Valid Mirant NY-Gen LLC DeKalb
MONGAUP RIVER WATCHER		**PHILLIP P SCHEPEL MONGAUP RIVER WATCHER 3 Country Meadow Dr Colts Neck, NEW JERSEY 077221571 Monmouth
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Delaware River Basin Commission
DELAWARE • NEW JERSEY
PENNSYLVANIA • NEW YORK
UNITED STATES OF AMERICA

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Steven J. Tambini, P.E.
Executive Director

April 10, 2019

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

Subject:
Eagle Creek Hydro, LLC, Rio Hydroelectric Project
Project No. P-9690-112
Eagle Creek Hydro, LLC, Mongaup Falls Hydroelectric Project
Project No. P-10481-067
Eagle Creek Hydro, LLC, Swinging Bridge Hydroelectric Project
Project No. P-10482-117

Dear Secretary Bose:

As the regional agency charged with the management of the Delaware River Basin's water resources, the Delaware River Basin Commission (DRBC) is interested in the on-going studies related to the Mongaup River Hydroelectric System Relicensing. Eagle Creek has two dockets (D-2011-020 CP-1 and D-2001-038 CP-3) with the DRBC under Article 3, Section 3.8 of the Delaware River Basin Compact and any changes to their normal or drought operating plans are subject to approval by the Executive Director (D-2001-038 CP-3, C. Decision, II.e.). We have identified a few issues of concern, related to releases from the Mongaup System and drought management for your consideration as the report is updated over the next year.

After the drought of the 1960s, the DRBC developed a comprehensive drought management plan to address the water resource needs in the basin under drought conditions. The drought management plan included provisions for use of the Mongaup System to sustain flows in the river during periods of drought. The Mongaup System requirements are described in both the Delaware River Basin Water Code (18 CFR Part 40 Sections 2.5.5 and 2.5.6) and the Mongaup System Drought Operations Plan. Other than reference to the Mongaup System Drought Operations Plan, there is little information in the ISR related to how changes in the Mongaup Systems operations, including those related to conservation releases and recreation, affect its ability to provide water for drought assistance. As part of the Updated Study Report and/or as a condition of relicensing, the Mongaup System Drought Operating Plan should be re-evaluated and modified to reflect how the Mongaup System will be operated under drought conditions and to quantify the level of drought protection provided by those operations.

In addition, Eagle Creek Hydro, LLC has entered into long-term contracts with thermoelectric power generators to provide consumptive use replacement water from the Mongaup System during drought conditions. The use of this water is not addressed in the ISR or the current drought operating plan. A

condition of the relicensing should be to incorporate the use of current or future volumes of water into the Mongaup System Drought Operating Plan.

Forecasts of Mongaup System releases are used by the Office of the Delaware River Master (ODRM) to determine releases from the New York City reservoirs in the upper basin to meet the Montague Flow Objective. When forecast releases are not made, the flow objective is often missed, resulting in impactfully low flows in the river upstream of the Mongaup River. When the Montague Flow Objective is missed, DRBC is required to use additional water from lower basin reservoirs to meet the Trenton Flow Objective, which exists to protect drinking water intakes for Philadelphia and New Jersey. It is important that accurate forecasts be provided to the ODRM so appropriate amounts of water are released for downstream purposes, including drinking and industrial water supply, habitat maintenance, recreation and assimilative capacity. As part of the Updated Study Report, consider adding assessments of how often forecasts match operations and the impacts to flows and habitat when releases from the Mongaup System differ from those forecasted. The provision of accurate forecasts should be a condition of the FERC relicense.

Your consideration of these comments is greatly appreciated. If you have any questions, please do not hesitate to contact Amy Shallcross (amy.shallcross@drbc.gov).

Sincerely,

Steven J. Tambini
Executive Director

United States Department of the Interior

NATIONAL PARK SERVICE
Upper Delaware
Scenic and Recreational River
274 River Road, Beach Lake PA 18405

IN REPLY REFER TO:

April 10, 2019

l.A.1 (UPDE-SO)

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

Project 9690
Filed Electronically

Re: Review of Initial Studies Report for Rio Hydroelectric Project (P-9690-112), Mongaup Falls Hydroelectric Project (P-10481-067), and Swinging Bridge Hydroelectric Project (P-10482-117), Sullivan, Orange Counties, New York.

Dear Secretary Bose:

The National Park Service (NPS) has reviewed and attended meetings for the Initial Studies Report for the above referenced hydroelectric projects and offers the following comments.

With Congressional passage of the Wild and Scenic Rivers Act (16 USC 1271-1287) -- Public Law 90-542, on October 2, 1968, the National Wild and Scenic Rivers System was established to preserve certain rivers with Outstandingly Remarkable Values (ORVs), including water quality, scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values, in a free-flowing condition, and that they and their immediate environments shall be protected for the benefit and enjoyment of present and future generations. Less than 1/4 of 1% of rivers in the United States are protected under the National Wild and Scenic Rivers System.

The Upper Delaware Scenic and Recreational River (UPDE) was designated as part of the National Wild and Scenic Rivers System (NWSRS) and as a unit of the national park system in 1978. This designation includes the uppermost 73.4 miles of the main stem Delaware River that comprises the New York-Pennsylvania border. Each designated river in the national system is to be managed in a way that protects and enhances the values that prompted its designation.

The longest and one of the cleanest free-flowing (undammed) rivers in the eastern United States, the Delaware maintains high water quality, ecological integrity, cultural, geological, recreational, and scenic values that are exceptional among the large river systems in this region. As the least-developed section of the last major river on the Atlantic Coast undammed the entire length of its main stem (330 miles), the Upper Delaware's wild and scenic, largely ecologically intact, free-flowing character supports key components and processes that contribute to the superb natural resources found here.

The unobstructed river affords access to the full complement of sea-run migratory fish, helping to buttress their larger range-wide populations by providing regionally important high quality historic spawning and rearing habitat in and above this segment, and thus allowing historic fluxes of nutrients, energy, and

biomass to and from the ocean. These features combine to provide a complex food web, a wide variety of habitats, and a healthy diversity of species.

The Upper Delaware River supports the best naturalized wild trout fishery in the eastern U.S., and provides habitat for state and Federally endangered species such as bridle shiner (*Notropis bifrenatus*) and dwarf wedgemussel (*Alasmidonta herterodon*).

The Upper Delaware Scenic and Recreational River also supports the largest canoe livery industry in the United States, and is within a day's drive of 10 % of the U.S. population.

Agencies assigned management and stewardship responsibilities for rivers that are part of this National Wild and Scenic Rivers System are tasked with evaluating, commenting on, and conducting Section 7(a) reviews of all water resources projects[1] that include federal assistance[2] for construction[3], including such projects below or above or on a tributary to a designated river. It is our intent to conduct a thorough Section 7(a) evaluation for this project in order to assure that the resources and values which the Upper Delaware Scenic and Recreational River (UPDE) was established to protect in perpetuity are not compromised. No department or agency of the United States shall assist by loan, grant, license, or otherwise in the construction of any water resources project that would have an adverse effect on the values for which such a river was established.

Remaining Study Needs

Flow Study - Water releases from the Mongaup River system affect Delaware River flow volumes and river conditions both upstream and downstream of the Mongaup River, due to water management mandates established for the Delaware Basin in the *Amended 1954 Supreme Court Decree* (https://webapps.usgs.gov/odrm/decree.html). Releases from the Mongaup River system count towards the USGS Montague Gage flow target at River Mile 246.3, and are factored into and dictate the directed compensating water releases from New York City reservoirs on the East and West Branches of the Delaware River. These dictated, directed compensating water releases are formulated (without having

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[1]Water Resources Projects: Construction of developments [including emergency repairs] that would affect the free-flowing characteristics of a Wild and Scenic River or [Section 5(a)] Study River, [or Section 2(a)(ii) application area] (36 CFR 297). Water resources projects located below the ordinary high water mark (OHWM) of the river always are subject to WSR agency Section 7 review. Examples of water resources projects include, but are not limited to, bank stabilization/revetments; bridges (e.g., abutments, piers, approaches); channelization; channel restoration; culverts; dams and dam removal; dredging or excavation; fish habitat/passage restoration or enhancement; gravel mining, in-channel transmission towers; levees; pipelines; recreation facilities like boat ramps and fishing piers; water diversions/wells; and activities that are authorized under Section 404 of the Clean Water Act by the US Army Corps of Engineers (USACE), Department of the Army. Projects located above the OHWM within uplands in the WSR corridor, such as cell towers, electrical transmission towers/lines, livestock grazing, solar arrays, timber harvesting, and wind turbines, are not subject to Section 7 review, but may be subject to review under Sections 10(a) and 12.

[2]Federal Assistance: Any assistance by an authorizing agency before, during, or after construction. Such assistance may include, but is not limited to: a license, preliminary permit, permit, or other authorization granted by the FERC; a license, permit or other authorization granted by the Army Corps of Engineers, (ACOE), pursuant to the Rivers and Harbors Act and Section 404 of the Clean Water Act. Assistance also includes federal funding of projects such as state highway proposals.

[3]Construction: Any action carried on with federal assistance affecting the free-flowing characteristics or the scenic or natural values of a Wild and Scenic River or Study River (36 CFR 297).

discretion over them) by the USGS Office of the Delaware River Master (ODRM; https://water.usgs.gov/osw/odrm/) in this office's daily design following the rules for water management in the Basin. The ODRM is following the dual objectives of meeting, but not exceeding, the Montague flow target, while also conserving water in the Basin to the greatest extent possible. More water coming from the Mongaup system (counting towards the USGS Montague Gage flow target) means less water coming from the New York City (NYC) reservoirs, less water flowing down the East and West Branches of the Delaware River, and less water flowing down the Delaware River main stem to the mouth of the Mongaup River at River Mile 261.1. Although the 1954 Supreme Court Decree does not legally obligate Eagle Creek to provide flows to meet the flow target at Montague, their operations do affect the amount of water that will be directed for release from the NYC reservoirs by the ODRM and this does impact suitable recreational flows and available suitable habitat for the 69 miles (94% of the 73.4 mile designation) of the Upper Delaware Scenic and Recreational River above the Mongaup River mouth.

The NPS reiterates its request for the following Flow Study to evaluate base flows and controlled recreational boating releases in the Mongaup River, and their resulting influence on Delaware River flows and conditions upstream of the mouth of the Mongaup River. These conditions would include cubic feet per second (CFS) flows, river height (stage), and temperature conditions at established USGS gages on the Delaware River above the Mongaup River, resulting in potential effects of aquatic and recreational resources.

A. Objectives of the Flow Study

The objectives of this study are to understand, correlate and define how Mongaup Project releases influence resulting flow and temperature conditions at USGS gages on the Delaware River upstream of the Mongaup River in the Delaware system. The Applicant should document the extent to which the high flow releases from the Rio Project influence Delaware River flows, especially in low flow periods.

USGS Gages that can demonstrate the influence on the Delaware system above the Mongaup include:
West Branch of the Delaware River at Stilesville, NY
West Branch of the Delaware River at Hale Eddy, NY,
East Branch of the Delaware River at Fish's Eddy, NY
Delaware River at Lordville, NY,
Delaware River at Callicoon, NY,
Delaware River above the Lackawaxen River near Barryville, NY,
Delaware River at Barryville, NY
Delaware River at Pond Eddy, NY (temperature only)

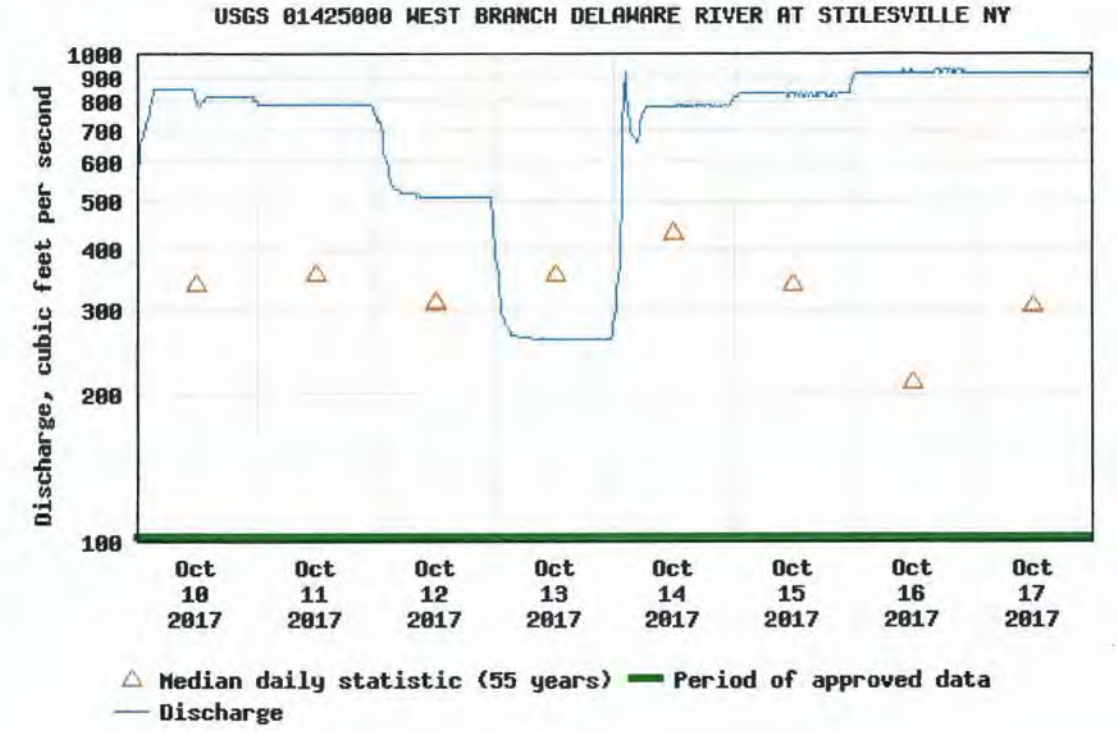
Examples of the influence of Mongaup projects releases on resulting Delaware River Flows above the Mongaup River are evident in the following hydrographs on pages 4-7. In these examples, forecast Mongaup releases on October 10 and 15, 2017, resulted in a drastic reduction in Cannonsville Reservoir releases, the ramifications of which are evident as this reduced flow volume moves down the West Branch and main stem Delaware River. No aquatic life, or process, is adapted to such wild fluctuations in flow in a river like the Delaware, nor is it conducive to planned recreational use.

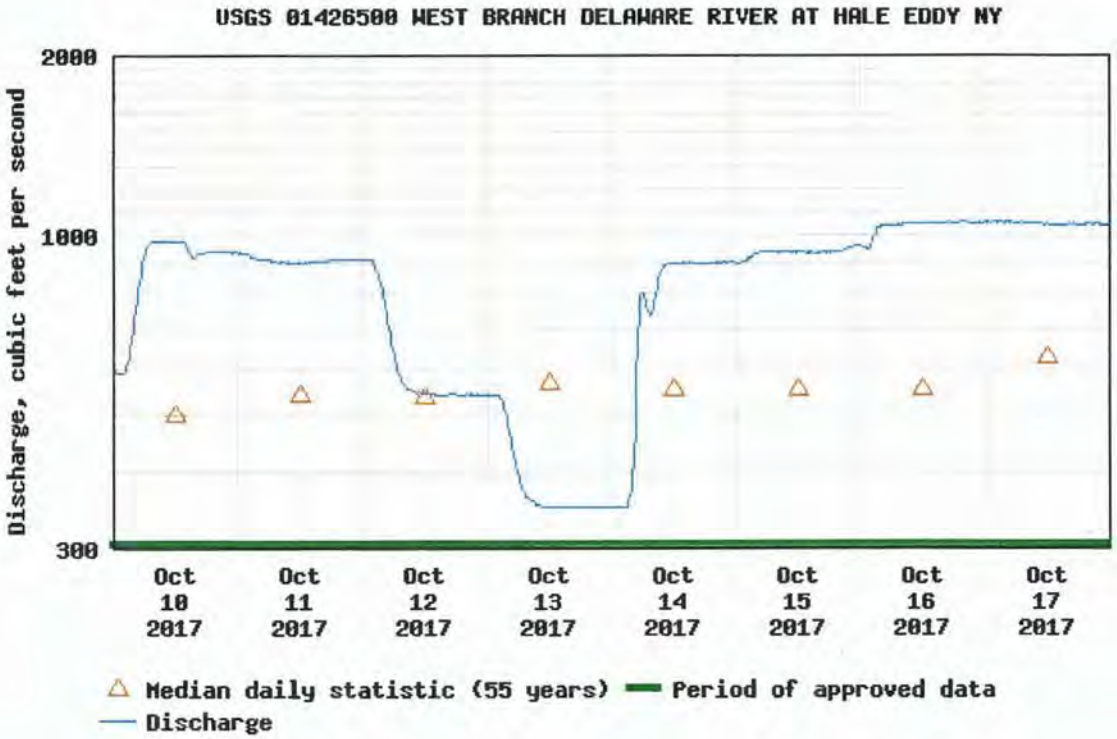
Again, the USGS Office of the Delaware River Master is just following the prescribed rules for water management in the Basin (over which it has no discretion) in directing this reduction in flow from the Cannonsville Reservoir release due to the release from the Rio Reservoir on the Mongaup counting towards the Montague flow target.

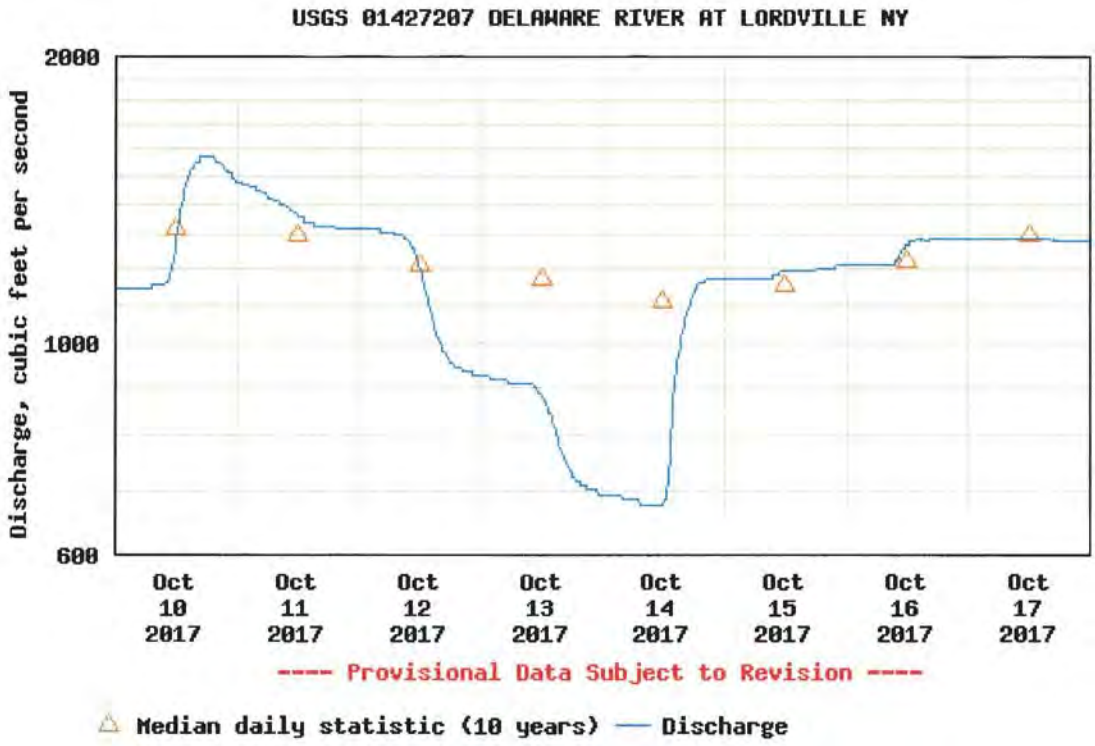
B. Nexus between the project operations and the effects:

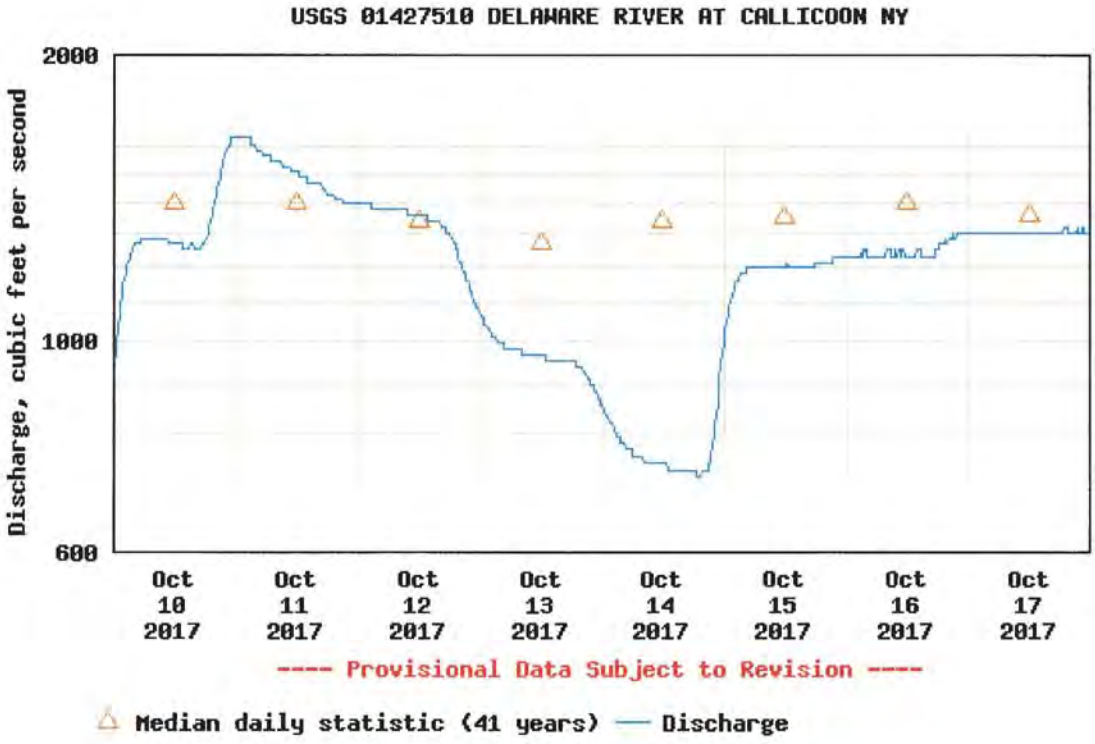
There is a significant nexus between the project operations and the effects (indirect, subsequent) on the resource to be studied. The study results will inform the development of license requirements. This could

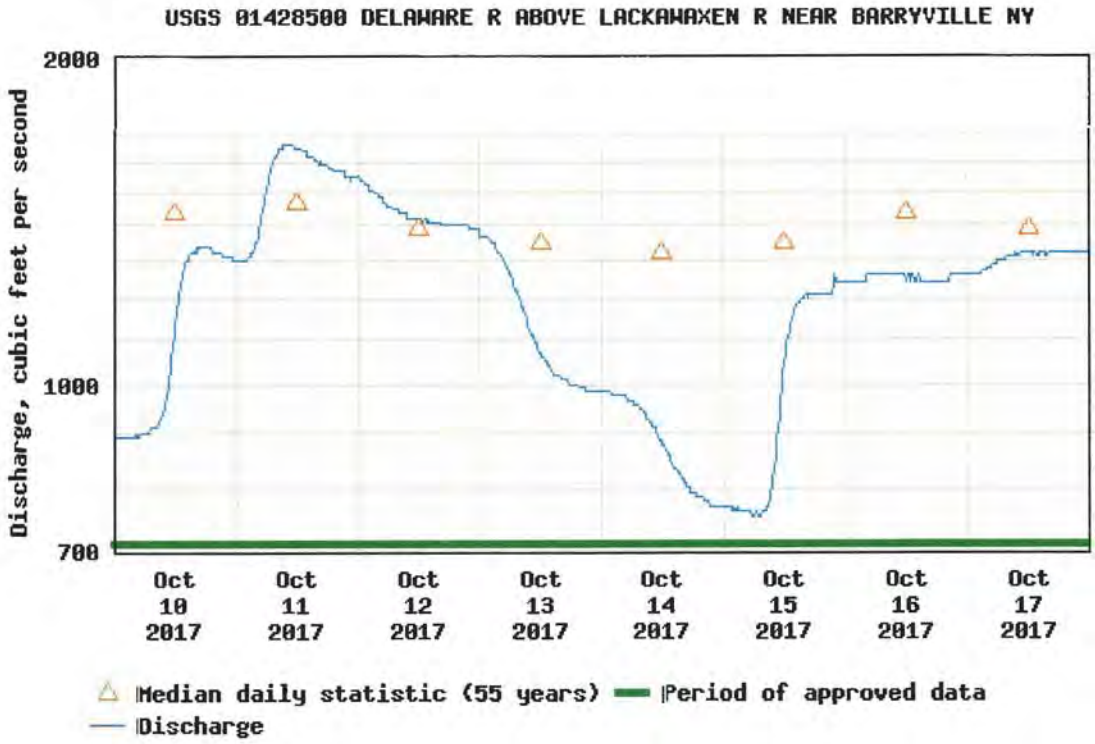
be a desktop exercise for the licensee. The USGS gage data could be readily analyzed and correlated with Mongaup releases with little difficulty. The cost to the applicant would be relatively minimal.



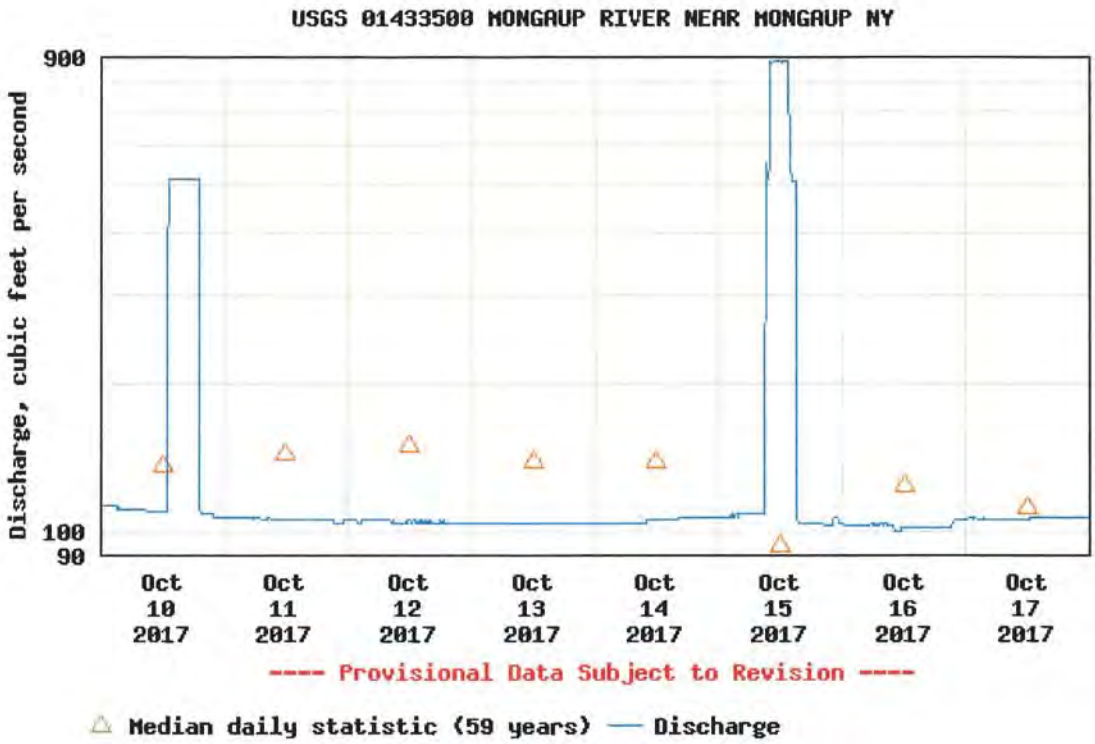


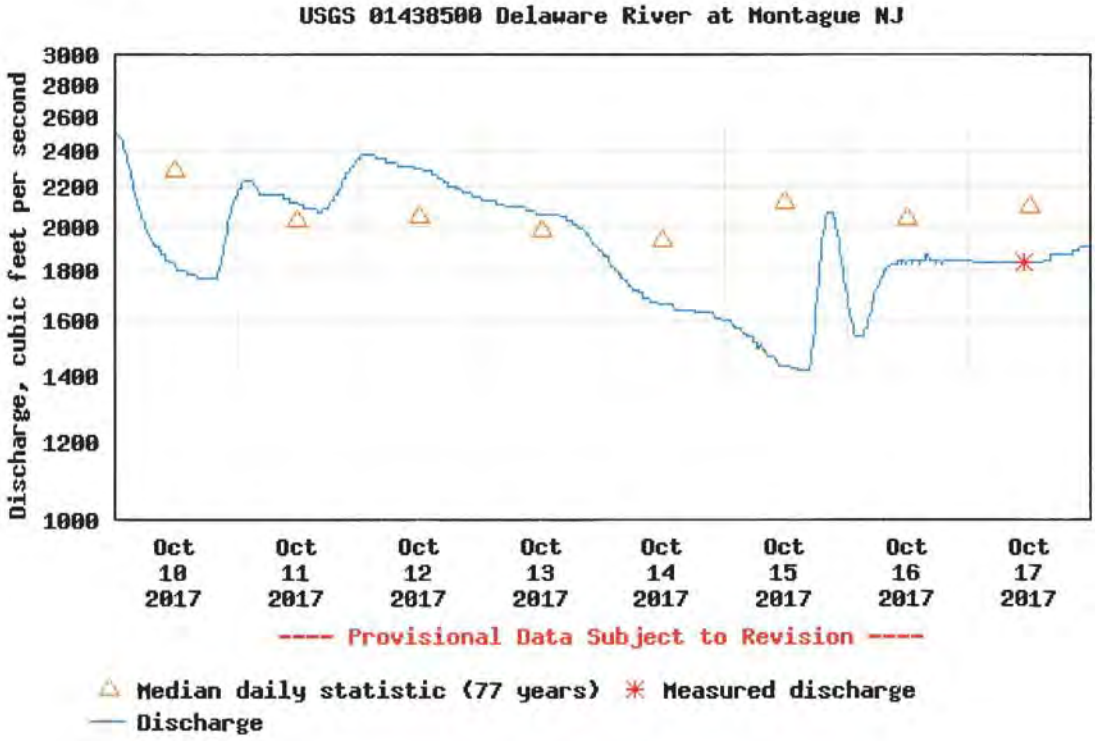

USGS 01427207 DELAWARE RIVER AT LORDVILLE NY
Discharge, cubic feet per second
2000
1000
600
Oct 10 2017
Oct 11 2017
Oct 12 2017
Oct 13 2017
Oct 14 2017
Oct 15 2017
Oct 16 2017
Oct 17 2017
---- Provisional Data Subject to Revision ----
Median daily statistic (10 years)
Discharge


USGS 01427510 DELAWARE RIVER AT CALLICOON NY
Discharge, cubic feet per second
2000
1000
600
Oct 10 2017
Oct 11 2017
Oct 12 2017
Oct 13 2017
Oct 14 2017
Oct 15 2017
Oct 16 2017
Oct 17 2017
---- Provisional Data Subject to Revision ----
Median daily statistic (41 years)
Discharge


USGS 01428500 DELAWARE R ABOVE LACKAWAXEN R NEAR BARRYVILLE NY
Discharge, cubic feet per second
2000
1000
700
Oct 10 2017
Oct 11 2017
Oct 12 2017
Oct 13 2017
Oct 14 2017
Oct 15 2017
Oct 16 2017
Oct 17 2017
Median daily statistic (55 years)
Period of approved data
Discharge


USGS 01432160 DELAWARE RIVER AT BARRYVILLE NY
Discharge, cubic feet per second
2000
1000
700
Oct 10 2017
Oct 11 2017
Oct 12 2017
Oct 13 2017
Oct 14 2017
Oct 15 2017
Oct 16 2017
Oct 17 2017
---- Provisional Data Subject to Revision ----


USGS 01433500 MONGAUP RIVER NEAR MONGAUP NY
Discharge, cubic feet per second
900
100
90
Oct 10 2017
Oct 11 2017
Oct 12 2017
Oct 13 2017
Oct 14 2017
Oct 15 2017
Oct 16 2017
Oct 17 2017
---- Provisional Data Subject to Revision ----
Median daily statistic (59 years)
Discharge


USGS 01438500 Delaware River at Montague NJ
Discharge, cubic feet per second
3000
2800
2600
2400
2200
2000
1800
1600
1400
1200
1000
Oct 10 2017
Oct 11 2017
Oct 12 2017
Oct 13 2017
Oct 14 2017
Oct 15 2017
Oct 16 2017
Oct 17 2017
---- Provisional Data Subject to Revision ----
Median daily statistic (77 years)
Measured discharge
Discharge

Repeating the Delaware River Water Temperature Monitoring Study

The objective of this study was to better understand the potential influence of Mongaup cold water releases on biota and water conditions in the Delaware River below the Mongaup River. Unfortunately, this study was conducted in a very anomalous water year subject to unusually high flows in the Delaware River that resulted in the reporting of only one month of water temperature data, and will likely skew any additional data reported by the Applicant if they are able to find the deployed data loggers and download the remaining data sets.. During 2018 we experienced average daily flows at the USGS Montague Gage that were 64% above normal (9,676 cfs vs an average of 5,902 cfs). In fact, the year 2018 had the second highest average daily flow in that 78-year time series (dating back to 1940) of any year other than 2011, according to the USGS Office of the Delaware River Master.

Although the Applicant did consult with the NPS, the U.S. Fish and Wildlife Service, and the New York State Department of Environmental Conservation on the locations for water temperature monitoring on the Delaware River above and below the confluence of the Mongaup River, they did not follow any existing water quality monitoring procedures for the collection of continuous water quality monitoring data. There are adequate resources available online with the USGS for the collection, processing, and analysis of continuous water quality data that would ensure the quality of the data sets reported by the applicant.[4] Without the adherence to quality assurance and quality control water quality data collection procedures water quality data sets lack reliability because of the variability of environmental conditions that can influence water quality. In contrast, the Applicant did follow some established protocols for other studies conducted in their ISR (i.e. fisheries, macroinvertebrates, recreational studies). For these reasons, this study needs to be repeated to provide meaningful results that will accomplish the study's objective.

The NPS will conduct a thorough Section 7(a) Wild and Scenic Rivers Act evaluation for this project in order to assure that the resources and values which the Upper Delaware Scenic and Recreational River was established to protect are not compromised. We will conduct this evaluation when sufficient studies have been completed and information is developed to enable our review. We will not sign off on this evaluation until we are satisfied that our resources and values are not being impaired by conditions of this license, and FERC will not be able to issue a license for this project until our Section 7(a) evaluation is finalized.

The NPS appreciates the opportunity to comment on the Initial Study Report and to offer additional study requests. We look forward to working with the applicant and other stakeholders during this relicensing. Questions or comments should be addressed to Don Hamilton at don_hamilton@nps.gov and Jessica Newbern at jessica_newbern@nps.gov.

Sincerely,

Carla H. Hahn
Acting Superintendent

[4] USGS Techniques and Methods 1-D3: Guidelines and Standard Procedures for Continuous Water-Quality Monitors: Station Operation, Record Computation, and Data Reporting. https://pubs.usgs.gov/tm/2006/tm1D3/

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Environmental Permits
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April 10, 2019

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

RE: **Comments on Initial Study Report and Study Requests**
Rio Hydroelectric Project (FERC No. P-9690)
Mongaup Falls Hydroelectric Project (FERC No. P-10481)
Swinging Bridge Hydroelectric Project (FERC No. P-10482)

Dear Secretary Bose:

The New York State Department of Environmental Conservation (NYSDEC) has reviewed the February 9, 2019 Initial Study Report (ISR) and March 11, 2019 Initial Study Report Meeting Summary (ISR Summary) filed with the Federal Energy Regulatory Commission (Commission or FERC) by Eagle Creek Hydro Power, LLC, Eagle Creek Water Resources, LLC, and Eagle Creek Land Resources, LLC (collectively referred to as Eagle Creek) for the Rio (FERC No. 9690), Mongaup Falls (FERC No. 10481), and Swinging Bridge Hydroelectric Projects (FERC No. 10482). The three projects, collectively known as the Mongaup River Hydroelectric Projects (Project or Projects), are located on the Mongaup River in Sullivan and Orange Counties, New York. Pursuant to 18 CFR § 5.15(c)(4), NYSDEC provides the following comments on the ISR and ISR Summary.

Fisheries Survey Study

Boat Electrofishing
While the ISR gives detailed information on species caught, catch per unit effort (CPUE) and Relative Abundance, there is no mention of specific sampling dates or the time of day of which sampling occurred. This information is necessary if replication of this survey is ever to be attempted. Additionally, it's believed that daytime boat electrofishing was conducted in these impoundments, and boat electrofishing was primarily conducted during summer months. However, the ISR states "Fisheries sampling methods and associated effort (Table 4-2) were developed based on the protocols, manuals, and guidelines provided by the NYSDEC which included: 1) A Philosophy of Trout Stream Management in New York (Engstrom-Heg 1979); 2) Lake and Pond Fish Community Survey Protocols, NYSDEC Bureau of Fisheries (Holst and Loukmas 2013); and 3) The Percid Sampling Manual (Forney et. al. 1994)." The "Lake and Pond Fish Community Survey Protocols" specifically states "Sample in late summer/early fall, preferably mid-

September through October, at night (½ hour before sunset to ½ hour after sunrise) with water temperatures in the range of 15ºC -23ºC (59ºF – 73ºF).” while the “Percid Sampling Manual” specifically states “Electrofishing in September-October when water temperatures are 10-18 degrees C (50-64 degrees F) will provide the most reliable indices of walleye abundance but mid- May to mid-June (when water temperatures range from 10-18 degrees C) is acceptable.” This plan also states “Inventory lakes at night between ½ hour after sunset and ½ hour before sunrise.” It appears these protocols were not used during the 2018 sampling period. Additionally, night boat electrofishing is conducted as catch rates are drastically reduced when electrofishing is conducted during daylight hours. It’s likely that electrofishing conducted in the impoundments resulted in merely presence/absence data of fish species collected. These results would not quantify the current “fish size class and structure” nor would it adequately quantify relative abundance of present fish species as required by FERC.

Seining
It’s noted that seining occurred at eight site locations in Toronto Reservoir and Swinging Bridge Reservoir and three sites in Mongaup Falls Reservoir and Cliff Lake. However, no fish were collected, as “[n]o catch resulted from seining due to the rough substrate, steep banks, and minimal fish cover in the sampling areas.” It appears this gear type could not be used in these reservoirs and should be stated as such. Instead, it’s presented that this gear type was used with a catch rate of zero.

Gill Netting
It appears gill nets were minimally used in Swinging Bridge Reservoir and were not utilized at all in Rio Reservoir with the following reasoning: “Following fish mortality occurrence via gill net in the Toronto, Cliff Lake, and Mongaup Falls reservoirs, the Swinging Bridge gill net effort was reduced to 3 events and the gill net effort at Rio Reservoir did not occur.” It’s well known that gill netting can be a lethal technique to fish which should be known to anyone deploying gill nets. Fish mortality from the usage of gill nets is acceptable when this technique is deemed suitable. Therefore, it’s recommended gill nets be used in 2019 throughout Swinging Bridge Reservoir and Rio Reservoir following protocols found in the Percid Manual (Forney et al. 1994). This should be done to sample deep water, pelagic habitats that were not efficiently sampled during these surveys.

Backpack Electrofishing
It’s noted that backpack electrofishing was conducted in multiple reaches in Black Lake Creek below Toronto Reservoir and Cliff Lake and Mongaup River below Swinging Bridge Reservoir, Mongaup Falls Reservoir and Rio Reservoir. Additionally, it’s noted that multiple sites were electrofished within the reach. Results from these sites have been combined into one table representing the entire reach. It would be preferable if these results could be separated out for each site within the reach. This would show differences in potential fish abundance between each site within the reach. Water temperature and dissolved oxygen could be a limiting factor as caused by the Project, which could affect potential fish abundance at different sites within each reach.

It's also noted that a crew of three personnel conducted backpack electrofishing. While this should be appropriate for Black Lake Creek (CFS 10 while sampling), this crew size would be inadequate on a larger stream such as Mongaup River with a CFS of 60-166 depending on releases at the time of sampling. Stream electrofishing can be extremely difficult during high flows with catch rates drastically reduced. Additionally, it's assumed blocking seines were not used during any of the backpack electrofishing since none were mentioned. Blocking seines would have sealed off the top and bottom of the reach which would have prevented fish from escaping the electrical field of the electrofishing units. Fish, especially trout, will escape the electrical field in heavier flows such as 60-166 CFS and could move freely upstream without the use of blocking seines. While surveys conducted in the Mongaup River documented brown trout, catch rates were low in all reaches (CPUE 2.07 – 10.5) and likely did not characterize actual abundance in these reaches.

General Comments
While these surveys appear to document the current fish species composition, they are inadequate when trying to determine relative abundance (e.g., CPUE), habitat use, current fish size class and structure, and condition factor of fish in project affected waters for the variety of reasons listed above. These objectives likely would have been met had the applicant fully utilized NYSDEC sampling plans such as:

-Lake and Pond Fish Community Survey Protocols (Holst and Loukmas 2013)
-Percid Sampling Manual (Forney et. al. 1994)
-Centrarchid Sampling Manual (Green, 1989)
- Guidelines for Stocking Trout Streams in New York State (Engstrom-Heg, 1990)

These plans in total would appropriately document relative abundance of the species present in project affected waters. Specifically, the Centrarchid Sampling Manual would have been ideal to sample most fish present in these impoundments and Guidelines for Stocking Trout Streams in New York State would have been ideal for sampling the streams affected by this project.

Alewife Study

The ISR states "NYSDEC has conducted a total of 51 fisheries surveys in the Projects' reservoirs over the past several decades (Table 5-1). These surveys range from highly focused (e.g., gill netting to assess Hybrid Striped Bass) to general biological surveys using multiple sample gear types. Six Alewife population assessment surveys were conducted in the Swinging Bridge Reservoir between 1989 and 2001, and one survey each was conducted at the Mongaup Falls and Rio Reservoirs in 1991." Data from a majority of these surveys would be inappropriately used to determine alewife abundance in the Project's impoundments. These surveys were mostly species specific, and only six surveys incorporated surveying for alewife in Swinging Bridge, and one each for Mongaup Falls and Rio Reservoirs. The remaining surveys would not be appropriate for characterizing abundance of alewife, and results should not be inferred from these surveys to determine alewife abundance. Additionally, survey techniques utilized during

the 2018 survey period are inefficient at characterizing alewife abundance in these impoundments. This is most evident in Mongaup Falls Reservoir as the ISR states: “Similar to the results of the NYSDEC 1993 effort, the 2018 gill net and electrofishing surveys failed to collect Alewife, which is likely a result of the survey objective of general fisheries survey not the specific targeting of Alewife. Even with the 2018 survey results, one should assume that Alewife likely still inhabit the reservoir.” It was noted by HDR fisheries staff at the Projects Relicensing ISR Stakeholder meeting that alewife were noted to be present, as they were seen schooling at the water’s surface during the 2018 sampling period. However, none were collected with the methodology used during these surveys.

Water Quality Study

Due to multiple problems with water quality probes failing, or inadequately being calibrated throughout the period of deployment, the approved studies were not conducted as provided for in the approved study plan. Furthermore, very wet conditions persisted from late July through the fall. This period is historically one of the worsts periods of times for water quality in the reservoirs and subsequently for the water releases to the streams below them. The data that was collected is therefore not representative of a normal condition and may likely only represent the best conditions for water quality. These anomalous environmental conditions are therefore not representative of what will likely be the normal conditions of operations. These circumstances demonstrate both criteria pursuant to 18 CFR § 5.15(d)(4).

Dam and release infrastructure have also changed since the license was issued. At Swinging Bridge Reservoir, Unit 1 is no longer operable and now all non-spill releases must be made through the Unit 2 intake. The water quality of the releases from Unit 2, which is at a higher elevation in the reservoir than Unit 1, is now likely to be different. In particular, releases from Unit 1, at a lower elevation, likely were colder and lower in oxygen in late summer and early fall than releases from Unit 2. Furthermore, new low flow turbines will be part of the project at Rio Reservoir and Swinging Bridge Reservoir, and this may change the way the releases are operated as we’ll as the water quality that enters the streams from them.

For the reasons above, all water quality studies in both the reservoirs and the streams should be continued for another year. Furthermore, in order for the data to be useful in correlating stream water quality as it may be affected by generation or other operations, flow, dissolved oxygen, and temperature, as well as any other parameters taken with data loggers, should be taken and reported at 15-minute increments.

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Thank you for the opportunity to comment on the ISR and ISR Summary. If you have any questions, please contact me at 518-402-9167.

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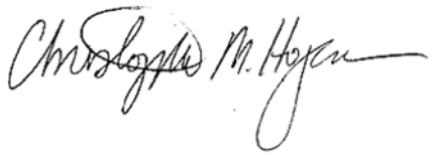

Christopher M. Hogan
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UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

Eagle Creek Hydro Power, LLC, Eagle Creek Water Resources, LLC, and Eagle Creek Land Resources, LLC	Project No. 9690-112 Project No. 10481-067 Project No. 10482-117

RESPONSE TO INITIAL STUDY REPORT AND ISR MEETING SUMMARY OF HOMEOWNERS ON TORONTO AND SWINGING BRIDGE PROPERTY OWNERS ASSOCIATION

Pursuant to 18 C.F.R. § 5.15(c)(4), and the schedule provided in the Commission's Scoping Document 2,[1] Homeowners on Toronto ("HOOT") and the Swinging Bridge Property Owners Association ("SBPOA") (collectively, "Homeowners") submit this response to the Initial Study Report[2] and ISR Meeting Summary[3] submitted by Eagle Creek Hydro Power, LLC, Eagle Creek Water Resources, LLC, and Eagle Creek Land Resources, LLC ("Applicants" or "Eagle Creek").

I. INTERESTS OF THE HOMEOWNERS

As laid out in more detail in HOOT's comments on the Applicants' Pre-Application Document,[4] HOOT's members are directly impacted by the operation of the Mongaup River hydroelectric projects, and in particular Eagle Creek's operational decisions that affect water elevation levels in Toronto Reservoir, the uppermost reservoir of the Swinging Bridge Project. The members of the SBPOA are likewise directly

[1] Scoping Document 2 for the Mongaup River Projects (Sept. 12, 2017), eLibrary No. 20170912-3026.

[2] Eagle Creek, Initial Study Report (Feb. 11, 2019), eLibrary No. 20190211-5008 ("ISR").

[3] Eagle Creek, Initial Study Report Meeting Summary (Mar. 11, 2019), eLibrary No. 20190311-5171 ("ISR Meeting Summary").

[4] HOOT, Comments on Pre-Application Document 2-3 (July 31, 2017), eLibrary No. 20170731-5187.

impacted by Eagle Creek's operation of the Mongaup River hydroelectric projects, which dictates water elevation levels in Swinging Bridge Reservoir.[5]

Eagle Creek's operation of the Swinging Bridge Project under the terms and conditions of the current license has had significant negative impacts on the Homeowners in many years. Specifically, although Eagle Creek could operate the Swinging Bridge Project to limit the fluctuation of both reservoirs and to maintain reservoir levels that support recreational use and aesthetics, it has chosen in many years to draw down one or both reservoirs to a degree that adversely impacts Homeowners' enjoyment of their property and impairs recreational use of the Swinging Bridge Project reservoirs.

Homeowners strongly believe that continuing the *status quo* is inappropriate and that any new license issued for the Swinging Bridge Project must take into consideration the significantly changed conditions in the project area since the Project's original license issued in 1992. When that license was issued, there were only 70 homes on the Swinging Bridge Reservoir, and none on Toronto Reservoir. Recreational use of the project reservoirs was also much lower thirty years ago. Now, however, as discussed in HOOT's comments on the Pre-Application Document, there are more than 100 homes on or very near the shoreline of Toronto Reservoir, with hundreds more as-yet-undeveloped lots in the Chapin Estate subdivision. Additional lots have been approved for development within the last 18 months, and a 50-room resort hotel is under construction and expected to open its first rooms next year.[6] And approximately 60 new homes have been

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[5] SBPOA, Comments on Proposed Study Plan (Dec. 11, 2017), eLibrary No. 20171211-58160. The SBPOA is an association of 132 homeowners on the Swinging Bridge Reservoir.

[6] Daniel Axelrod, *Groundbreaking for $50M Chatwal Lodge Retreat in Sullivan*, Times Herald-Record (Dec. 5, 2018), https://www.recordonline.com/news/20181205/groundbreaking-for-50m-chatwal-lodge-retreat-in-sullivan.

constructed on or near Swinging Bridge Reservoir. Given these changes, it is crucial that the pre-filing studies being performed by the Applicants provide the Commission with accurate and adequate information to enable it to understand and weigh the recreational, aesthetic, environmental, and other impacts of alternative modes of operation that are more consistent with modern standards and the expected uses of the Project reservoirs during the new license term.

II. COMMENTS ON ISR AND ISR MEETING SUMMARY

A. Project Operations Model

The Project Operations Model is to be used to evaluate the effects on the different interests at play in this relicensing under various potential operating regimes. It is obviously crucial that the model be as accurate as possible, so that stakeholders and the Commission can rely on its output. Homeowners appreciate HDR's explanation in the ISR and the ISR Meeting Summary of the inputs that HDR used to calibrate the Project Operations Model and to test it against historical data. Since HDR used its own proprietary modeling software to develop the model, however, it is a black box. Homeowners look forward to participating in the workshop required by the Study Plan Determination at which the Applicants will show how the model works and its ability to analyze operating alternatives.[7] Homeowners also plan to participate in the planned discussions referenced in the ISR Meeting Summary (at 8) of the various operating alternatives that will be run on the model and the timing of those runs. Pending those opportunities to better understand the Project Operations Model and its capabilities, the

[7] Study Plan Determination B-5 (Feb. 9, 2018), eLibrary No. 20180209-3004 ("Study Plan Determination").

Homeowners have the following questions and comments based on the information provided in the ISR and ISR Meeting Summary.

1. Use and Selection of Reference Basin for Unimpaired Hydrograph

In the ISR,[8] HDR explains that:

> The Mongaup River at Mongaup Valley, NY, gage reports flows upstream of Swinging Bridge Reservoir for the period 10/1/2002 through present. This gage data will be utilized for the development of the basin hydrology. Due to the lack of specific and long-term historical hydrology data for the points of interest, the pre-10/1/2002 unimpaired hydrology was estimated by means of proration of the streamflow data of a reference basin, adjusted for basin productivity.

Homeowners appreciate the reasoning behind Eagle Creek's decision to use a Reference Basin for its modeling in this case, since site-specific historical hydrology data are apparently limited. The ISR's explanation, however, raises concerns that Eagle Creek's choice of Reference Basin data in this case might not be appropriate. The drainage area of the selected Reference Basin gage—the Beaver Kill near Cooks Falls, NY—is significantly larger than Swinging Bridge Reservoir, the largest of the Project reservoirs;[9] and for Toronto Reservoir, the Reference Basin gage data had to be prorated by a factor of 0.09.[10] Since, as the ISR appears to recognize, the behavior of large watersheds may differ significantly from small watersheds,[11] extrapolating the hydrograph for each of the

[8] ISR, App. A, Att. 1, Operations Model Study—Model Logic and Verification Report 7 ("Operations Model Study Report").

[9] *Id.* at 10, 12.

[10] *Id.* at 13.

[11] *Id.* at 9.

Mongaup River Project reservoirs from the Beaver Kill near Cooks Falls, NY gage data may produce inaccurate results.

Homeowners recognize that there may not be a better alternative Reference Basin to use for modeling purposes. According to the Operations Model Study Report, the Beaver Kill near Cooks Falls NY gage data had the highest R^2 value among the tested Reference Basins when compared to the Mongaup River at Mongaup Valley, NY gage data.[12] And Homeowners cannot evaluate at this time whether using multiple Reference Basins might produce a more accurate model. Nevertheless, additional information would help stakeholders and the Commission better understand the operation of the model and whether its underlying assumptions are reasonable. For example, it would be helpful to have additional information on: the characteristics of the relevant Mongaup River and Beaver Kill watersheds, including information on basin slope and land use; the adjustments to Reference Basin gage data "on a productivity or volume basis" to the United States Geological Survey gages at the Mongaup River Projects, which are referenced on pages 8-9 of the Operations Model Study Report;[13] and whether, notwithstanding the overall high correlation between the Reference Basin and Mongaup River at Mongaup Valley gage data, there are certain conditions—e.g., high flow periods or certain seasons—for which that correlation breaks down.

[12] *Id.* at 12.

[13] *Id.* at 8.

2. Load Shape

At the ISR meeting, it was stated that the model uses load shape data to represent market price.[14] No source is cited for those data, however.[15] Homeowners request that the Applicants provide the source and basis for the numbers in Table 3-1 of the Operations Model Study Report.

For purposes of modeling the Project's past operations under its current license, the use of the load shape data in Table 3-1, as well as the "Strictly Peaking" Plant Operation Type,[16] may well be appropriate. However, this implies that the ability of the Project Operations Model to simulate other Project Operation Types has not been directly tested by the methodology that Eagle Creek used to verify the model. Since the Model is an important tool for testing alternative modes of project operation, Homeowners request that the Applicants provide a more complete explanation of: (1) how the various Plant Operation Types are modeled; and (2) whether and to what extent the verification methodology used by Eagle Creek to test the Project Operations Model also assures that the Model can be used to evaluate alternative modes of project operation and their impacts on flows and reservoir elevations with reasonable accuracy.

3. Reservoir Elevations

The Operations Model Study Report's "Summary of Modeled Results versus Historical Data" uses a comparison of modeled versus historical generation and flow data to verify the accuracy of the Project Operations Model.[17] According to that Report,

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[14] ISR Meeting Summary at 7.

[15] Operations Model Study Report at 17-18.

[16] *Id.* at 31.

[17] *Id.* at 44-46.

"[t]he verification scenario used daily-changing historical elevations as the target elevation, with the spill and minimum elevations set in a band around this target reservoir elevation in order to replicate historical operations." [18]

This explanation of Eagle Creek's methodology appears to indicate that while the model may have been verified with respect to flows and generation, the reservoir elevations used in the modeling were allowed to vary from historical levels. Based on the charts that appear on pages 33-34 of the Operations Model Study Report, that variation may be significant: the deviation band for Toronto Reservoir appears to have been 50 feet during some parts of the year; at Swinging Bridge Reservoir, the deviation band was much as 20 feet.

Understanding the ability of the Project Operations Model to accurately reflect reservoir elevations is particularly important for Toronto Reservoir. There is no generation at Toronto Dam. Therefore, it is unclear whether the metrics Eagle Creek has used in its verification methodology—aggregate generation and Modeled Rio Annual Average Flow[19]—are relevant to the issue of whether the Project Operations Model accurately models Toronto Reservoir. If the Project Operation Model's accuracy in modeling reservoir elevation levels for each of the individual project reservoirs has not been tested, it should be verified. If such verification is not possible, that limitation should be explained and noted.

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[18] *Id.* at 33.

[19] *Id.* at 44-46.

4. Accuracy of Project Operations Model

The ISR concludes that the Project Operations Model "reasonably characterizes operations of the system" and that it "is adequate for use in evaluating the effects of alternative operating scenarios on generation, reservoir levels, and outflows from the Projects."[20] To support that conclusion, Eagle Creek provides information comparing actual and modeled aggregate annual generation for each of the three Mongaup River Projects, as well as a comparison of modeled and actual average annual flows at the Rio Project.

Homeowners recognize that no model is perfect. However, because one of the Model's primary functions is to evaluate operating scenarios that are significantly different from the Project's historical operations, it would be helpful to have additional detail on the Model's accuracy under different conditions. For example, given the trend toward narrower operating bandwidths or even true run-of-river operation in modern licenses, we expect that scenarios including such requirements will be included among those to be run during the second study season. Is the Model's performance better, worse, or close to the average during periods when reservoir elevations are high? During certain seasons? When flows are at certain levels?

B. Recreation Survey Data

According to the Study Plan Determination, "[t]he recreation use and needs assessment will consist of recreation user spot counts, an on-site survey of recreation users, and existing recreation use data (i.e. data from other sources, such as whitewater sign-in logs and existing [New York State Department of Environmental Conservation

[20] Operations Model Study Report at 49.

("NYSDEC")] recreation use information, where applicable)."[21] Similarly, the ISR states that "[a]ctual use records for the Whitewater Boating Access Area *and any other sites where such records are kept* (e.g., sites managed by the NYSDEC) will also be utilized as an additional method of determining the level of use."[22] The ISR also separately indicates[23] that:

> With respect to privately-owned recreation sites within and abutting the Project reservoirs, such as marinas, background research to identify these sites and consultation with their owners will be performed to obtain information on the site's available amenities and services, as well as hours of operation. Photos of these sites will be taken and a GPS datapoint will be recorded while in the field.

In light of this separate discussion of privately-owned recreation sites within and abutting the Project reservoirs, Homeowners would like to clarify that in addition to the site assessments described above, the applicants will be requesting, and including in the USR, actual use records from the marinas and other privately-owned sites on Swinging Bridge and other Project *reservoirs*, just as they are doing for recreation sites within and abutting *stream reaches* in or near the Projects. Collection of this data is necessary to give the Commission an accurate picture of recreation use throughout the Projects.

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[21] Study Plan Determination at B-29.

[22] ISR, App. H, Recreation Facility Inventory, Recreation Use and Needs Assessment, and Reservoir Surface Area Assessment Study 5 (emphasis added).

[23] *Id.* at 4.

CONCLUSION

Homeowners request that the comments and questions set forth above be addressed in the second study season and the Updated Study Report.

Respectfully submitted,

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April 10, 2019

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April 10, 2019

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RE: Rio Hydroelectric Project (FERC No. P-9690-112)
Mongaup Falls Hydroelectric Project (FERC No. P-10481-067)
Swinging Bridge Hydroelectric Project (FERC No. P-10482-117)
Comments on Initial Study Report and Study Requests

Dear Ms. Bose:

The U.S. Fish and Wildlife Service (Service) has reviewed the February 9, 2019, Initial Study Report (ISR) and March 11, 2019, Initial Study Report Meeting Summary (ISR Summary) filed with the Federal Energy Regulatory Commission (Commission) by Eagle Creek Hydro (Applicant) for the Rio (FERC No. 9690-112), Mongaup Falls (FERC No. 10481-067), and Swinging Bridge Hydroelectric Projects (FERC No. 10482-117). The three projects, collectively known as the Mongaup River Hydroelectric Projects (Project or Projects), are located on the Mongaup River in Sullivan and Orange Counties, New York.

Background

The Service originally provided comments on the March 30, 2017, Preliminary Application Document (PAD) and study requests in our July 26, 2017, letter (PAD Comments). We provided updated study requests and comments on the Applicant's September 12, 2017, Proposed Study Plan (PSP) in our December 11, 2017, letter (PSP Comments). The Service provided comments on the January 10, 2018, Revised Study Plan (RSP) in our January 25, 2018, letter (RSP Comments). The Service participated in the February 13-14, 2019, ISR meeting after the issuance of the ISR. The Service herein is providing comments on the ISR, the ISR Summary, and requests for modifications of, and new studies pursuant to, 18 CFR Section 5.15 (a-e).

The Commission required the Applicant to conduct 16 studies in the February 9, 2018, Study Plan Determination (SPD) for the Projects, and the completed or in-progress reports of these studies were included in the ISR:

1) Operations Model/Delaware River Flow Study
2) Aquatic Habitat Assessment Study
3) Fisheries Survey Study
4) Alewife Study
5) Fish Entrainment/Impingement Study
6) Water Quality Study
7) Macroinvertebrate and Mussel Study
8) Recreation Facility Inventory, Recreation Use and Needs Assessment, and Reservoir Surface Area Assessment Study
9) Whitewater Boating Assessment Study
10) Shoreline Management Assessment Study
11) Cultural Resources Study
12) Black Brook Dam Decommissioning Study
13) Special-Status Species Study
14) Bald Eagle Management Study
15) Bypass/Base Flow Transect Evaluation Study
16) Wetland Study

General Comments

The ISR indicates that the Aquatic Habitat Assessment Study, Recreation Facility Inventory, Recreation Use and Needs Assessment and Reservoir Surface Area Assessment Study, and Bald Eagle Management Study will be completed in 2019. The results of these studies are expected to be provided in the Updated Study Report (USR) in February 2020. The Service will review the completed studies when they are submitted in the USR.

The Service does not have any comments or additional study requests pertaining to the information contained in the Macroinvertebrate and Mussel Study, Cultural Resources Study, Wetland Study, Black Brook Dam Decommission Study, Shoreline Management Assessment Study, or Whitewater Boating Assessment Study as submitted in the ISR.

It is our understanding that the National Park Service (NPS) will be providing comments regarding the Delaware River Flow Study and the New York State Department of Environmental Conservation (NYSDEC) will be providing comments regarding the Fisheries Survey Study, Alewife Study, and Water Quality Study. The Service may submit response comments[1] to the comments by the NPS and NYSDEC[2].

Operations Model/Delaware River Flow Study

The Service has indicated in our prior comments that the Mongaup River can provide a substantial component (i.e., approximately 60 percent) of the flow in the Delaware River below the Mongaup River confluence. The ISR indicates that the monthly average flows for gauges in the Mongaup and Delaware River were utilized and the Applicant determined that, in a dry year, the Mongaup River contributed less than 10 percent of the flow in the Delaware River at

[1] 18 CFR Section 5.15(c)(5)
[2] These comments are due to be filed with the Commission by May 10, 2019

Port Jervis, New York. The Commission's SPD found that "...real-time instantaneous flows from the Rio Project's peaking flow releases/cessations [have] a greater influence on the Delaware River than demonstrated in a mean daily flow analysis. As a result, we find that operation of the Rio Project operation [*sic*] and subsequent flow releases and cessations likely affect water temperature on a sub-daily basis in the Delaware River...." On Page 7 of the ISR Summary, the Applicant noted our comment regarding this issue and stated that the ISR meets the requirements of the SPD in presenting mean monthly discharge data for this study. The Service disagrees that this meets the conclusions of the SPD. The Service recommends that the Applicant modify this analysis to include 15-minute discharge data and evaluate the sub-hourly contribution of the Project to fully evaluate the impact of the Mongaup flow releases on the Delaware River.

The stakeholders identified the potential downstream impacts of inaccurate forecasts of flow releases from the Project by the Applicant to the United States Geological Survey (USGS) Rivermaster as a potential impact to downstream habitats in the Delaware River. The Rivermaster attempts to meet flow targets with releases from the New York City Reservoirs during low flow periods. In the ISR, the Applicant contrasts actual versus forecasted flow releases from 2014-2017 and indicates that the Applicant over-forecasted (i.e., flows provided to the Delaware River were less than anticipated) approximately 10 percent of the time during low flow periods. The Applicant defined low flow periods as times when the USGS gauge at Montague, New Jersey, was less than 2,000 cubic feet per second (cfs). The Service recommends that correspondence from the Rivermaster be provided that confirms that releases from the Mongaup Projects are not utilized by the Rivermaster for flow targets at flows above 2,000 cfs. Additionally, the Applicant has not provided the dates, amount of over-prediction, and percentage of flow contribution (or potential flow contribution) for the Project releases. The Service recommends that this information be included in the USR.

In Section 6.2.1 of the ISR, the Applicant indicates that they met with the Rivermaster in June 2018 and modified the format for providing forecasts to the Rivermaster. In 2018, only 10 days were defined as low flow periods under this new reporting system due to high flows in the Delaware River[3]. In order to better understand this changed circumstance in reporting method, and as a result of the anomalous high flows experienced in 2018, the Service recommends that the SPD be modified to incorporate an additional year of reporting for downstream flow variations due to the Mongaup River forecasts utilized by the Rivermaster.

The Applicant has concluded that the Operations Model for the Projects is complete. The Service has noted some concerns regarding the model verification results that were described in the ISR Summary; however, we acknowledge that the model is meant to be used as a tool to compare the relative difference among different operational scenarios. Therefore, the Service recommends that the Commission establish a timing and process for evaluation of different scenarios by the stakeholders that corresponds to the relicensing process and studies as outlined in any modifications to the SPD. The Service recommends that the Commission incorporate opportunities for revision of the model should substantive issues with model output arise during scenario comparisons.

[3] As illustrated in Figure 5-33 in the ISR.

Special Status Species Study

The ISR indicates that surveys for small whorled pogonia orchid (*Isotrea medeoloidies*) (SWP) were conducted in September 2018. In our June 26, 2018, letter to the Applicant providing technical assistance regarding high priority survey areas for SWP, the Service referred the Applicant to our website[4] for the most recent information regarding federally listed species. On our website, we provide a reference sheet for suitable survey windows for the federally listed plant species in New York State[5]. The SWP is an early flowering species and difficult to identify and locate outside of flowering periods. The Service's recommended survey period for this species is May until mid-June. The Applicant's survey in September is not sufficient to determine the presence or absence of SWP at the Projects. However, the Applicant did provide a discussion regarding the presence of suitable habitat at the surveyed locations in the ISR. The Service recommends that the Commission require the Applicant to either conduct surveys for SWP during May to mid-June in 2019 or evaluate the surveyed locations for potential Project impacts to this listed species according to our recommendations for project reviews found on our website as a next step in informal consultation on this species.

Fish Passage and Protection

In our PAD Comments, PSP Comments, and RSP Comments, the Service requested Fish Protection and Upstream and Downstream Passage Studies for the Projects to evaluate upstream and downstream passage of migratory fish species, particularly American shad (*Alosa sapidissima*) and American eel (*Anguilla rostrata*). The Projects entrain fish and block the movement of American eel and other fish species. The Commission did not require the Applicant to conduct this study in the SPD as fisheries, entrainment and survival, American eel, and American shad studies were to be conducted in 2018 that would provide information that would determine the need for Project and species-specific fish passage and/or protection measures. The various studies recommended by the Service and required by the Commission in the SPD have shown that: 1) American eel are abundant below the Rio Project and concentrate at the dam tow and powerhouse; 2) American shad are found below the Rio Project; 3) the Projects can entrain the vast majority of the fish recorded as occurring both in the impoundments and found near the intakes; 4) survival of a 10-inch adult fish would range from 46-84 percent when entrained through only one main Project powerhouse; 5) survival of an adult American eel would range from approximately 0-50 percent when entrained through only one main Project powerhouse; 6) survival of American eel passing through multiple powerhouses would be less than 10 percent; and 7) the Rio minimum flow unit has approximately 100 percent mortality for American eels and other fish exceeding 10 inches in length.

The Service believes that the information presented in the SPD clearly indicates that a Fish Protection and Upstream and Downstream Passage Study is warranted. The Service has previously described the required information for a study request in our PAD Comments. This study would include the use of literature reviews, discussions with fishway engineers, and site-specific data to evaluate potential fish passage/protection solutions for all fish species at the Projects, with special emphasis on American eel. Potential solutions for American shad should

[4] https://www.fws.gov/northeast/nyfo/es/section7.htm

[5] https://www.fws.gov/northeast/nyfo/es/Plant Survey Timeframes for New York Listed Species.pdf

be evaluated at the Rio Project only as Mongaup Falls is the natural barrier to upstream migration for this species. The Service recommends that the Commission modify the SPD to require a Fish Protection and Upstream and Downstream Passage Study. The Service recommends that the Commission require the evaluation of entrainment and mortality at the new minimum flow powerhouse at the Swinging Bridge Project as a component of this study as information regarding this new unit was not provided in the ISR.

Flow Studies

The Service requested in our PAD Comments that the Applicant conduct flow studies in bypassed reaches and downstream Mongaup River below the Projects to the Delaware River. We recommended either a Delphi or Instream Flow Incremental Methodology (IFIM) study in these reaches. A previous IFIM-type study had been conducted at the Projects during the original licensing; however, no previous studies were conducted in Black Lake Creek below Cliff Lake Dam. The Service has reservations about the methods utilized in the study and the representativeness of a 30-year-old study to current habitat conditions in the Mongaup River basin after the implementation of notably different flow regimes in the current licenses for the Projects and channel-altering floods in the intervening time. The Applicant proposed to utilize the previous study as the basis for recommendations concerning appropriate flows at the Project. As a reasoned approach to addressing our concerns, the Service recommended an evaluation of the transects from the previous study against new data at the transects, the establishment of new transects in Black Lake Creek below Cliff Lake Dam, and a critical evaluation of the assumptions and methods in the previous study against current IFIM guidelines. The Applicant conducted this study and provided the results in the ISR.

The Service has reviewed the report in Appendix O of the ISR and the variation in the results and deviations from current IFIM guidelines are notable. We note that comparison of the recent data with the previous study was difficult due to the lack of georeferenced information and the conversion from paper maps to field transects. There will be inherent variation in this effort. The purpose of the study provided in the ISR was to determine if the previous study and the data collected in the effort are still representative of the Mongaup River and suitable for use as a basis for recommendations regarding flows in the system. The Applicant went to exceptional effort to verify this condition and this report is likely the closest any effort could get to replicate the previous study. While the Applicant notes that geographic variation, differences in flows studied, and classification error may contribute to the differences observed, the Service believes that the study should stand on its own as comparison to the previous data as an example of the replicability of these types of studies. The Service does not agree with the assertion by the Applicant that aggradation or erosion cannot be ascertained from the transect profiles. The transects are aligned to the bank and compared as closely as possible to the previous study transects. Where the transects show differences in depth, especially at similar flows, these changes are clearly indicative of changes in the riverbed.

The Applicant provided data for 17 transects in Table 5-7 that were compared to data from the previous study. While the flows provided were different, there were notable differences from the expected regarding the wetted width, cross-sectional area, mean water depth, maximum water depth, and mean water velocity among the two efforts. Additionally, Table 5-8 provides a

comparison of the substrate differences between the previous study and the current effort. The Service will focus on a few notable examples in the different reaches below.

In the most closely replicated transect, Toronto Downstream Transect 4, flows only differed by 0.5 cfs; however, cross-sectional area, mean water depth, maximum depth, and mean water velocity all increased by 25-33 percent. Page 1-6 in Appendix O of the ISR shows that the channel deepened by approximately 2 feet and widened by approximately 6 feet. Table 5-8 indicates that sand substrates in this reach were entirely lost with concomitant increases in gravel and cobbles. The loss of sandy substrates and the increased velocity and depth in this reach would notably change the habitat suitability for species included in the original study.

In the Rio Bypassed Reach Transect 1-5, measured flows were 130 percent higher than in the previous study; however, while wetted width increased by 5 percent, cross-sectional area, mean water depth, and maximum water depth actually decreased. The mean velocity in this transect increased by 180 percent at this higher flow. The increased width, shallower depths, and increased velocity are indicative of channel widening and aggradation as is clearly evident on Page 1-51 of Appendix O in the ISR. Table 5-8 indicates that all cobble substrates in this reach were lost with subsequent increases in plant and organic matter. The Rio Bypassed Reach Transect 2-4 also clearly shows channel aggradation on the right bank as illustrated on Page 1-65 of Appendix O in the ISR. All cobble substrates were also lost in this reach.

In contrast to the Rio Bypassed Reach transects, the Mongaup Falls Bypassed Reach Transect 7 shows a clear erosional area on the right bank as illustrated on Page 1-59 of Appendix O in the ISR. It is clear that the right channel has shifted nearly 20 feet on center and deepened approximately 3 feet. Table 5-8 also indicates that all cobble substrates have been lost in this reach. While Table 5-7 indicates that considerably less flow was recorded in the 2018 study than in the previous study, mean water depth, maximum water depth, and mean water velocity did not decrease as drastically as the flow reduction, when compared to other transects. This indicates that this channel is now deeper and faster than in the previous study.

In the downstream reach of Swinging Bridge Transect 74, the channel has also aggraded nearly 2 feet, widened by 25 feet, and has separated into two channels at this location with a 20-foot island near the left bank. Table 5-8 indicates this channel has gained approximately 25 percent of both cobble and sand; neither substrate was recorded in this channel in the previous study. Immediately upstream, Transect 82 has also aggraded approximately 2 feet and divided into two channels. This channel was previously recorded as 100 percent cobble, but is now less than 60 percent cobble, with 25 percent plant/organic material, and 16 percent gravel now present. It is clear that there is now increased channel complexity in this reach, and this represents a variety of new habitats and flow-related variability compared to the previous study.

In the downstream reach of the Mongaup River below Rio at Transect 1, the channel has aggraded 1-2 feet, and narrowed by 10 feet. Table 5-7 indicates that velocities in this reach have increased more proportionally than the increased flow provided in the study when compared to other transects and changes in depth and area values. Immediately upstream, Transect 2 has also aggraded approximately 2 feet and divided into two channels. The substrates in these reaches have remained relatively consistent with some small gains in cobble and gravel.

The Service believes that there is clear evidence of channel changes in the Mongaup River system in both Black Lake Creek and in all reaches of the Mongaup River. While not all transects show evidence of changes in channel morphology, there are consistent areas with aggradation and channel widening, with less common evidence of erosion and deepening. Cobble substrates consistently declined or disappeared from the majority of transects. The Service has illustrated that approximately one-half or more of all the resurveyed transects showed notable changes since the previous study was conducted. It is apparent that the Mongaup River and Black Lake Creek are dynamic systems and that a 30-year-old study is not representative of the current conditions in the system.

Section 5.7 in the ISR provides a critical evaluation of the methods utilized in the previous flow study. The ISR describes the limitations and compromises made by the previous licensee and the agencies at that time. Namely, only the Rio Bypassed Reach had a relatively robust IFIM-type study conducted, which evaluated depth, velocity, and substrate within a flow model. Additionally, there was some unstructured incorporation of water quality into the analysis. None of the reaches were analyzed for inter-annual variability with respect to flows. The remainder of the reaches were analyzed with less rigor, with agreement from the agencies, at that time. In several cases, only two flows were utilized to develop flow-habitat relationships, which is less than the recommended number of ten or more flows or the use of a stage-discharge model. No flow study was conducted in Black Lake Creek below Cliff Lake Dam. The review in Section 5.7, indicates on multiple occasions that IFIM-type analyses require that the channel is stable and unchanging over time, which is clearly not the case here.

The Service believes that the flow studies conducted at the time of the original licensing are no longer sufficient to determine suitable flow recommendations for the Mongaup Projects. The ISR has clearly indicated that the river depths, velocities, and substrates utilized to develop the previous flow-habitat relationships have changed. Additionally, the methods utilized at that time are no longer appropriate for a new evaluation of flow-habitat relationships at the Projects. Judicial precedent holds that each relicensing is a new opportunity to rebalance the resources at hand[6]. At the time of the original licensing, the agencies agreed to compromises in the study methodologies that are no longer supported by the Service in this new evaluation of the Projects. Continued issues with flows and water quality at the Projects have contributed to the need for another evaluation.

The Water Quality Study provided in Appendix F of the ISR illustrates several flow dependent issues that support the Service's recommendation for new flow studies. In Figures 5-7 and 5-8, dissolved oxygen (DO) and temperature data are provided for the Black Lake Creek downstream of Toronto Reservoir. Currently, there is a 10 cfs minimum year-round release below this development. It is clear that in reaches near the release, DO is below the NYSDEC standard of 5.0 milligrams/Liter (mg/L) daily average and 4.0 mg/L instantaneous throughout the summer months. The release from Toronto Reservoir is relatively cold at 45-55 degrees Fahrenheit (°F) during the summer months; however, when the flow was reduced from 120 cfs to 10 cfs in late July, temperatures in the downstream portions of the reach increased to over 85°F until a period of above average rainfall occurred in the region in early August. Currently, this reach is not classified as a trout water by the NYSDEC; however, the common occurrence of brook trout

[6] Yakima Indian Nation v. FERC, 746 F.2d 466 (9th Cir. 1984)

(*Salvelinus fontinalis*) in the reach will likely result in a reclassification of this reach. The Project would then more frequently exceed the NYSDEC standards for DO and temperature[7] in this reach. Additional flows need to be evaluated in this reach to determine suitable flows to meet NYSDEC water quality standards and the current habitat available for brook trout in this reach under different, potentially seasonal, flow requirements.

Black Lake Creek below Cliff Lake was never evaluated for flow-habitat relationships. Instead, the requirements for this reach were based on those required upstream below Toronto Reservoir. Currently, there is no information available to determine if additional habitat could be provided by additional flow in this reach or that if seasonal flows would be appropriate.

In the Mongaup River below Swinging Bridge, the Water Quality Study in Appendix F of the ISR indicates that there were regular instantaneous excursions below the NYSDEC standard of 5.0 mg/L with some as low as 3.5 mg/L. The reach upstream of Mongaup Falls Reservoir, showed temperature increases of approximately 20°F during the summer months compared to the upstream location and concomitant decreases in DO such that the daily average standard of 6.0 mg/L was also not met. It also appears that an anoxic layer develops at the elevation of the Swinging Bridge intake[8] such that generation does not necessarily pull from deep, cold, anoxic water, but actually from warm, anoxic water. In this case, generation actually provides warm, anoxic water to the Mongaup River below the Swinging Bridge Project. During the brief low flow period in July 2018, the 100 cfs minimum flow still increased in temperature compared to the downstream location, while DO was above NYSDEC standards due to the aeration provided by the minimum flow release valve. This relationship among DO, temperature, and generation may become more notable when the new minimum flow unit is brought online at the Project, as it may not provide the aeration typically provided by the valve. It is clear from data provided in Figure 5-17 and Figure 5-18 that the Mongaup River below Swinging Bridge does not notably increase in DO as in more high gradient streams like Black Lake Creek. Due to the changes in stream geomorphology and the lack of information regarding the habitat suitability of seasonal flow changes (i.e., 100 cfs versus 60 cfs), additional flow studies are required to evaluate the habitat relationships in this reach.

In the Mongaup Falls bypassed reach and the Mongaup River downstream of the Mongaup Falls powerhouse, it is difficult to determine the relationships of water quality in the bypassed reach and downstream due to high flows experienced in 2018 that precluded stratification in the reservoir due to regular mixing during periods of generation[9]. This condition limits the ability to determine the protectiveness of the minimum flow requirements as there are little data to evaluate the thermal stress at the downstream end of the bypassed reach or the potential DO or temperature impacts that might result from stratification of the reservoir, as may be typically expected in a low flow year. The brief low-flow period in July 2018 indicates that when the Project is not generating, temperatures below the Project can increase dramatically from the

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[7] New York State standards for trout waters are 6.0 mg/L daily average and 5.0 mg/L instantaneous, which are more stringent than the current standards.

[8] This s-shaped profile of DO over the thermocline is indicative of anoxia developing due to trapped decomposing organic material concentrating at the high density region above the hypolimnion. This condition was not observed in the reservoir profiles collected in the 1993 entrainment studies conducted at the Projects.

[9] The Mongaup Falls Reservoir stratified to below the level of the intakes in the reservoir profiles collected in the 1993 entrainment studies conducted at the Projects. This was noted as a low flow year.

upstream station reaching 80°F on July 20th. This is a level considered stressful to trout species in the river.

A situation similar to that in the Mongaup Reservoir occurred in the Rio Reservoir. Stratification was relatively limited compared to previously provided data. The high flows during the 2018 season resulted in few periods when the Project was not generating or when the minimum flow unit was not generating above 100 cfs. Notably, the upstream Rio bypassed reach water quality monitor indicated a prolonged period of DO conditions below the NYSDEC standard of 5.0 mg/L daily average, even though the reservoir was not heavily stratified. Dissolved oxygen levels were above NYSDEC standards at the downstream water quality monitor above the powerhouse; however, temperature impacts are not readily interpretable as the flows in the reach generally averaged 150-180 cfs during the summer months.

The Service believes it is clear that there are interrelated water quality and flow-dependent habitat issues that are outstanding at the Projects and that the previous IFIM-type studies cannot serve as the basis for flow recommendations at the Projects. Additionally, anomalous high flow conditions in 2018 precluded a rigorous evaluation of water quality at the Projects. Therefore, the Service recommends that the Commission: 1) modify the SPD to require an additional year of water quality monitoring and reservoir profiles at the Projects; and 2) require flow studies as originally requested in our PAD Comments. The Service would support either a Delphi method or an IFIM study. The collection of an additional year of water quality data in conjunction with rigorous flow studies and the 2018 transect evaluation efforts should provide the information necessary to provide flow recommendations at the Projects.

*****

We appreciate the opportunity to comment on the ISR and the ISR Summary and provide study requests for consideration by the Commission. If you have any questions or desire additional information, please contact John Wiley at john_wiley@fws.gov or 607-753-9334.

Sincerely,

David A. Stilwell
Field Supervisor

cc: TU, Plattsburg, NY (W. Wellman)
HDR, Syracuse, NY (J. Gibson)
NYSDEC, New Paltz, NY (M. Flaherty, M. Disarno, N. Ermer, B. Drumm)
NYSDEC, Albany, NY (C. Hogan, K. Paulsen, N. Cain)
FERC e-file
NPS, Boston, MA (K. Mendik)
NPS, Beach Lake, PA (D. Hamilton, J. Newbern)
DOI, SOL, Newton, MA (L. Tyhach)

United States Department of the Interior

U.S. GEOLOGICAL SURVEY
Reston, Virginia 20192

APR 10 2019

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In Reply Refer To:
Mail Stop 436
DTS # GS19000629

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

Subject:
Eagle Creek Hydro, LLC, Rio Hydroelectric Project
Project No. P-9690-112
Eagle Creek Hydro, LLC, Mongaup Falls Hydroelectric Project
Project No. P-10481-067
Eagle Creek Hydro, LLC, Swinging Bridge Hydroelectric Project
Project No. P-10482-117

Dear Secretary Bose:

In its 1954 Decree adjudicating New Jersey versus New York, 347, U.S. 995 (1954), the U.S. Supreme Court established the position of the Delaware River Master (now referenced as the Office of the Delaware River Master (ODRM)) and assigned him responsibility for administering the provisions of the Decree relating to water yields, diversions, and releases from water-supply reservoirs owned by New York City (City) while simultaneously conserving the waters of the river, its tributaries, and the reservoirs. Parties to the Decree Delaware, New Jersey, New York, New York City, and Pennsylvania, are affected by the operations of the ODRM. The Court specifically directed the ODRM to design and direct releases of water from the reservoirs to maintain required target flows (typically, 1,750 cubic feet per second) at the USGS streamgage on the Delaware River at Montague, New Jersey, approximately three-days travel time downstream of the reservoirs, while taking into account downstream contributing releases from reservoirs not controlled by the City. Among these reservoirs are the Mongaup River hydropower facilities, including Rio Reservoir, which are operated by Eagle Creek Renewable Energy (Eagle Creek). Eagle Creek is seeking renewal of its FERC license to operate Rio Reservoir.

In accordance with the Decree, forward-looking hydropower production forecasts and related planned releases of water from the Mongaup River Hydroelectric System are essential inputs into ODRM formulation of daily directed releases of water from the City reservoirs. At the request of the ODRM, Eagle Creek has taken steps to share this information. However, there is a need to ensure increased and more detailed communications and coordination between ODRM and Eagle Creek in particular regarding timely updates when forecasts change. When hydropower production plans change but are not shared with the ODRM, the ODRM may inadvertently direct release of more or less water from the City reservoirs than is needed to maintain the Montague Flow Objective. Too little water could result in interruption of habitat needed for aquatic species or the amount of water needed by the Delaware River Basin Commission to meet the Trenton Flow Objective. Too much could result in use of water that might have been more properly saved and released at a more advantageous time.

As a result of these concerns, the ODRM requests that when FERC issues a new license to Eagle Creek, it includes a protocol for communication and coordination between ODRM and Eagle Creek. This would require Eagle Creek and any successor owner/operators of Rio Reservoir to report to the ODRM daily hydropower production and water release schedules for the reservoir at least 10 days in advance, as well as, any updates to those schedules whenever the newly planned releases differ. Please reach out to Kendra Russell (klrussell@usgs.gov), Deputy Delaware River Master, for additional information.

Sincerely,

Robert R. Mason, Jr.
Delaware River Master

Cc: John Roberts, Chief Justice of the United States
David Wunsch, Director, Delaware Geological Survey
Michele Putnam, Assistant Commissioner, Water Resource Management, NJ DEP
Paul Rush, Deputy Commissioner, NYCDEP
Mark Klotz, Bureau Director, NYSDEC
Aneca Atkinson Acting Deputy Secretary for Water Program, PA DEP
Steve Tambini DRBC
Mary Kay Foley, MD-DC-DE Water Science Center Director, USGS
Richard Kropp, NJ Water Science Center Director, USGS
Robert Breault, NY Water Science Center Director, USGS
Curtis Schreffler, Acting PA Water Science Center Director, USGS
Mike Tupper, NE Regional Director, USGS
Don Cline, Associate Director for Water, USGS

FEDERAL ENERGY REGULATORY COMMISSION
WASHINGTON, DC 20426
June 10, 2019

OFFICE OF ENERGY PROJECTS

Project No. 9690-112–New York
Rio Hydroelectric Project
Eagle Creek Hydro, LLC

Project No. 10481-067–New York
Mongaup Falls Hydroelectric Project
Eagle Creek Hydro, LLC

Project No. 10482-117–New York
Swinging Bridge Hydroelectric Project
Eagle Creek Hydro, LLC

Mr. Robert Gates
Eagle Creek Renewable Energy, LLC
116 North State Street
PO Box 167
Neshkoro, WI 54960-0167

Reference: Determination on Requests for Study Modifications for the Rio, Mongaup Falls, and Swinging Bridge Hydroelectric Projects

Dear Mr. Gates:

Pursuant to 18 C.F.R. § 5.15 of the Commission's regulations, this letter contains the determination on requests for modifications to the approved study plan for the relicensing of Eagle Creek Hydro Power, LLC's, Eagle Creek Water Resources, LLC's, and Eagle Creek Land Resources, LLC's (co-licensees collectively referred to as Eagle Creek Hydro) Rio Hydroelectric Project No. 9690, Mongaup Falls Hydroelectric Project No. 10481, and Swinging Bridge Hydroelectric Project No. 10482 (collectively referred to as the Mongaup River Projects). The determination is based on the study criteria set forth in sections 5.9(b) and 5.15(d) of the Commission's regulations, applicable law, Commission policy and practice, and staff's review of the record of information.

Background

The study plan determination for the projects was issued February 9, 2018. On February 11, 2019, Eagle Creek Hydro filed initial study reports for the 16 studies

required by the study plan determination.[1] Eagle Creek Hydro held study report meetings on February 13 and 14, 2019, and filed a summary of the meetings on March 11, 2019. In its May 10, 2019 filing, Eagle Creek Hydro identifies ongoing studies and variances from some of the approved study schedules. As a result, Eagle Creek Hydro proposes new schedules for filing amended study reports for the following studies: (1) Aquatic Habitat Assessment; (2) Bald Eagle Management; (3) Special-status Species Survey; (4) Water Quality Study – Delaware River Temperature Monitoring; and (5) Recreation Facility Inventory, Recreation Use and Needs Assessment, and Reservoir Surface Area Assessment studies.

Comments

Comments on the study reports and meeting summary, including requests for study modifications and new studies, were filed by: the U.S. Fish and Wildlife Service; National Park Service (Park Service); United States Geological Survey; New York Department of Environmental Conservation; Delaware River Basin Commission; American Whitewater, Appalachian Mountain Club, and Kayak and Canoe Club of New York; Swinging Bridge Property Owners Association and Homeowners on Toronto; and Andrew Boyar. Eagle Creek Hydro and the homeowners associations filed reply comments on May 10, 2019.

A number of the comments received do not specifically request modifications to the approved studies, and therefore, are not addressed herein. For example, some of the comments address the presentation of data and results; question the adequacy of information; recommend protection, mitigation, or enhancement measures; and dispute study conclusions. In addition to the items listed above, this determination does not address requests for study modifications or additional studies that have been addressed in the previous determination.[2] This determination only addresses comments and requests that would require study modifications or additional studies.

[1] An updated study report for the Whitewater Boating Assessment Study was filed on March 11, 2019.

[2] On July 27, 2018, the Park Service requested a flow study of the Delaware River upstream of its confluence with the Mongaup River. The Director's study plan determination, issued February 9, 2018, did not require this study because the Mongaup River Projects do not affect flows in the Delaware River upstream of the confluence with the Mongaup River. The Park Service did not provide any new information regarding this study (section 5.15(e)(4)); therefore, we do not address the Park Service's flow study request in this determination.

Study Plan Determination

Pursuant to section 5.15(d) of the Commission's regulations, any proposal to modify a required study must be accompanied by a showing of good cause, and must include a demonstration that: (1) the approved study was not conducted as provided for in the approved study plan, or (2) the study was conducted under anomalous environmental conditions or that environmental conditions have changed in a material way. As specified in section 5.15(e), requests for new information gathering or studies must include a statement explaining: (1) any material change in law or regulations applicable to the information request, (2) why the goals and objectives of the approved study could not be met with the approved study methodology, (3) why the request was not made earlier, (4) significant changes in the project proposal or that significant new information material to the study objectives has become available, and (5) why the new study request satisfies the study criteria in section 5.9(b).

As indicated in Appendix A, the proposed revisions to the study schedules are approved.[3] No additional changes to the schedule are necessary; thus, requests for study modifications on all studies must be filed by April 9, 2020, after Eagle Creek Hydro files the Updated Study Report. The request for a new Fish Passage Feasibility Study is approved. The requested modifications to the Operations Modeling/Delaware River Flow Study, Water Quality Study, and Whitewater Boating Assessment Study are approved in part. The requested modifications to the Fisheries Survey Study and the request for a new Instream Flow Study are not approved. In addition, staff's recommended modifications to the Cultural Resource Study are approved. With the exception of the revised study schedules noted above, the specific modifications to the studies and the basis for modifying or not modifying the study plans are explained in Appendix B (Requested Modifications to Approved Studies) and Appendix C (Requested New Studies).

Commission staff considered all study plan criteria in accordance with section 5.9 of the Commission's regulations. However, only the specific study criteria particularly relevant to the determination are referenced in appendices B and C.

[3] The schedule changes are necessary to complete studies that could not be completed in 2018. The new schedules include target completion dates for the ongoing studies in July and August of 2019.

Please note that nothing in this determination is intended, in any way, to limit any agency's proper exercise of its independent statutory authority to require additional studies.

If you have any questions, please contact Nicholas Ettema at (312) 596-4447 or via email at nicholas.ettema@ferc.gov.

Sincerely,

for
Terry L. Turpin
Director
Office of Energy Projects

Enclosures: Appendix A – Summary of Determinations on Requested Modifications to Approved Studies
Appendix B – Staff's Recommendations on Requested Modifications to Approved Studies
Appendix C – Staff's Recommendations on Requested New Studies

APPENDIX A

SUMMARY OF DETERMINATIONS ON REQUESTED MODIFICATIONS TO APPROVED AND NEW STUDIES

Requested Modifications to Approved Studies (*see* Appendix B for discussion)

Study	Recommending Entity	Adopted	Adopted in Part	Not Adopted
Operations Modeling/Delaware River Flow Study	United States Fish and Wildlife Service (FWS)		X	
Fisheries Survey Study	New York Department of Environmental Conservation (New York DEC)			X
Water Quality Study	National Park Service, FWS, New York DEC, Eagle Creek Hydro		X	
Whitewater Boating Assessment Study	American Whitewater, Appalachian Mountain Club, and Kayak and Canoe Club of New York		X	
Cultural Resources Study	FERC	X		
Aquatic Habitat Assessment Study	Eagle Creek Hydro	X		
Bald Eagle Management Study	Eagle Creek Hydro	X		
Special-Status Species Study	Eagle Creek Hydro	X		

Study	Recommending Entity	Adopted	Adopted in Part	Not Adopted
Recreation Facilities Inventory, Recreation Use and Needs, and Reservoir Surface Area Assessment Study	Eagle Creek Hydro	X		

Requested New Studies (*see* Appendix C for discussion)

Study	Recommending Entity	Approved	Approved with Modifications	Not Required
Fish Passage Feasibility Study	FWS	X		
Instream Flow Study	FWS			X

APPENDIX B

STAFF RECOMMENDATIONS ON REQUESTED MODIFICATIONS TO APPROVED STUDIES

Operations Model/Delaware River Flow Study

Background

The Mongaup River Projects include the Swinging Bridge Hydroelectric (Swinging Bridge Project) Project, the Mongaup Falls Hydroelectric Project (Mongaup Falls Project), and the Rio Hydroelectric Project (Rio Project). Each of the projects is operated and maintained under a separate Commission license.

The Swinging Bridge Project consists of three dams and associated reservoirs including Toronto, Cliff Lake, and Swinging Bridge. Toronto reservoir, a storage reservoir that is the most upstream, supplies a minimum flow of 10 cubic feet per second (cfs) to Black Lake Creek, as required by the existing license. Black Lake Creek flows into Cliff Lake, which is connected via a submerged tunnel to Swinging Bridge reservoir. Cliff Lake discharges a required minimum flow of 10 cfs to Black Lake Creek immediately downstream of Cliff Lake Dam, which then flows downstream to its confluence with the Mongaup River, downstream of the Swinging Bridge Project and upstream of the Mongaup Falls Project. The Swinging Bridge Project powerhouse contains one operational turbine (unit 2) with a maximum capacity of 1,015 cfs, and is located immediately downstream of Swinging Bridge Dam. A minimum flow release valve adjacent to the powerhouse supplies a required minimum flow of 100 cfs to the Mongaup River, which flows into the Mongaup Falls reservoir.

The Mongaup Falls Project releases a minimum flow of 70 cfs immediately downstream of the dam into the Mongaup River and releases a minimum flow of 20 cfs from the Mongaup Falls powerhouse (620 cfs maximum hydraulic capacity) located on the Mongaup River approximately 2,700 feet downstream of the Mongaup Falls Dam.

From the Mongaup Falls Project, the Mongaup River flows into the Rio reservoir. The Rio Project releases a required minimum flow of 100 cfs into the Mongaup River from a minimum flow powerhouse located approximately 300 feet downstream of the Rio Dam. The main Rio Project powerhouse, located approximately 8,000 feet downstream of the dam, can release a maximum of 870 cfs into the Mongaup River, which flows downstream approximately 3 miles to the confluence with the Delaware River. Eagle Creek Hydro Power, LLC, Eagle Creek Water Resources, LLC, and Eagle Creek Land Resources, LLC (Eagle Creek Hydro) maintain minimum flows downstream of each project, while operating each project in a peaking mode.

The goal of the Operations Model/Delaware River Flow Study is to: (1) develop an operations model that can be used to evaluate potential and proposed operating alternatives[4] for the projects and assess potential effects of those alternatives on aquatic, recreation, and other resources in project-affected areas; and (2) evaluate the effect of flow releases from the Rio Project on flows in the Delaware River downstream of its confluence with the Mongaup River.

Eagle Creek Hydro developed, calibrated, and verified an operations model capable of evaluating effects of alternative operating scenarios on water levels in the reservoirs, outflows from the projects, and generation. For the Delaware River analysis, Eagle Creek Hydro compared flows for a dry, normal, and wet year from the Mongaup River downstream of the Rio Project and four additional U.S. Geological Survey (USGS) gages located downstream on the Delaware River. In addition, Eagle Creek Hydro compared its forecasted and actual flows from the Rio Project to determine the accuracy of the forecasts that it voluntarily provides to the Delaware River Master (River Master).[5]

Operations Model Review Process

Requested Study Modification

The U.S. Fish and Wildlife Service (FWS) states that because the operation model is meant to be used as a tool to compare the relative difference among different operational scenarios, the Commission should establish a timing and process for the evaluation of different operational scenarios that may be recommended by stakeholders. FWS also recommends that the Commission incorporate opportunities for revision of the model, if substantive issues arise during model comparison.

[4] Project operation alternatives include alternative minimum flows, reservoir elevations, and/or recreational flow releases.

[5] In 1954, the U.S. Supreme Court issued a Decree in State of New Jersey v. State of New York and City of New York in which the Court established the position of the River Master. The Court directed that the River Master perform multiple duties and functions including administering the provisions of the Decree relating to yields, diversions, and releases; conserving the waters of the river; compiling data on the water needs of the parties; checking and correlating streamflow measurements and records; observing, recording, and studying the effect of developments in the watershed on water supply and other uses; and making periodic reports to the Court.

Comments on Requested Study Modifications

In its reply comments, Eagle Creek Hydro states that several first-season studies are ongoing and expected to be completed in the third quarter of 2019. Eagle Creek Hydro suggests it is premature to evaluate scenarios proposed by stakeholders until completion of the required studies.

Discussion and Staff Recommendation

Although several studies are ongoing, including the Recreation Facility Inventory, Recreation Use and Needs Assessment, and Reservoir Surface Area Assessment Study; Aquatic Habitat Assessment Study; and Whitewater Boating Assessment Study (as modified below), Eagle Creek Hydro initiated all 16 of the required studies during the first study season in 2018 and provided an extensive amount of study results completed to date in the initial study report filed in February 2019. Therefore, there is sufficient information in the record to preliminarily identify and model potential alternative operational scenarios (section 5.9(b)(6)).

The approved process plan and schedule requires Eagle Creek Hydro to prepare and distribute to the stakeholders for comment, a Preliminary Licensing Proposal (PLP) or in the alternative, a draft license application, by November 2, 2019. The deadline for stakeholders to provide comments on the PLP is January 31, 2020. Eagle Creek Hydro is required to file the updated study report by February 9, 2020, and the deadline for filing the license application is March 31, 2020. In order to facilitate the timely identification and evaluation of alternative operational scenarios to include in the final license application, we recommend that the study be modified to require Eagle Creek Hydro to convene a technical conference with invited licensing stakeholders by September 30, 2019, to identify and to reach agreement on any alternative operational scenarios to run through the model. Stakeholders, including Commission staff, should be given a minimum of 30 days after the technical conference to file any additional written comments and recommendations on the identified operational scenarios. Eagle Creek Hydro should then run the model for the identified alternative operational scenarios and report the results in the updated study report due by February 9, 2020.

Sub-hourly Flow Analysis

Requested Study Modification

FWS states that the Mongaup River can provide a substantial component, approximately 60 percent, of the flow in the Delaware River and notes the study plan determination determined “real-time instantaneous flows from the Rio Project’s peaking flow releases/cessations would have a greater influence on the Delaware River than

demonstrated in a mean daily flow analysis."[6] As such, FWS recommends that Eagle Creek Hydro modify the analysis of project effects on Delaware River flows to include 15-minute discharge data and evaluate the sub-hourly contribution of the Rio Project peaking flows to fully evaluate the effect of peaking operation on flows in the Delaware River.

Comments on Requested Study Modifications

In its reply comments, Eagle Creek Hydro suggests that the study plan determination only required Eagle Creek Hydro to graph flows for the USGS gages located downstream of the Rio Project powerhouse and other gages on the Delaware River downstream of the confluence with the Mongaup River for one dry, one normal, and one wet year. Because Eagle Creek Hydro provided this information in the study report, it contends that it has fulfilled the requirements of the study plan determination.

Discussion and Staff Recommendation

Eagle Creek Hydro completed a Delaware River flow analysis that graphically compared flows discharged from the Rio Project to flows in the Delaware River throughout the entirety of a dry, normal, wet year. In addition, Eagle Creek Hydro conducted additional analyses that describe the average monthly percentage of flows the Rio Project contributes to total flow in the Delaware River downstream of the confluence with the Mongaup River. The study report shows that the Rio Project contributes approximately 2 to 17 percent of the average monthly flow to the Delaware River at Port Jervis, New Jersey across all hydrologic conditions.[7] However, the study plan determination indicated that peaking operation of the Rio Project affects both flow and temperature on a sub-daily basis and would contribute much higher percentages of the total flow in the Delaware River on an instantaneous basis relative to daily or monthly averages.[8]

Although the study plan determination did not explicitly require a sub-daily analysis of Rio Project operation and effects on flow in the Delaware River, we find that Eagle Creek Hydro's analyses did not meet the approved goal of this study because the

[6] The study plan determination at B-51; discussion and recommendation for Delaware River temperature monitoring.

[7] Appendix A of the initial study report filed on February 11, 2019, at Attachment 4-10 and 4-11.

[8] Study plan determination at B-51.

monthly analyses do not adequately evaluate the effect of the Rio Project's peaking operation on flows in the Delaware River (section 5.15(d)(1)). Further, new information collected by Eagle Creek Hydro as part of the Water Quality Study confirms that peaking operation at the Rio Project affects temperature in the Delaware River on a sub-hourly basis;[9] thus, peaking operation would also affect flow on a sub-hourly basis (section 5.15(e)(4)). As such, an analysis of sub-hourly effects of Rio Project operation on flows in the Delaware River downstream of the confluence with the Mongaup River is necessary to provide adequate information for our environmental analysis (section 5.9(b)(5)).

We recommend that Eagle Creek Hydro evaluate the sub-hourly effects of Rio Project operation on flows in the Delaware River during representative periods (days to weeks) of low, normal, and high flow in the Delaware River (e.g., flows less than the 90 percent annual exceedance flow at Port Jervis, NY, mean and/or median flows, and flows greater than the 10 percent annual exceedance flow) when the Rio Project released water from its minimum to maximum hydraulic capacity. The analysis should include periods that overlap with the existing water temperature data for the Delaware River collected in 2018 and additional temperature data to be collected in 2019 (as modified in the Water Quality Study below) so that we can evaluate effects of project operation on flow and temperature in the Delaware River.

Analysis of Forecasted Flows

Requested Study Modification

FWS states that Eagle Creek Hydro modified the format of its flow forecasts that Eagle Creek Hydro provides to the River Master, and as a result, only 10 days in 2018 were defined as low flow periods under this modification. Because of the modification, and because of the anomalous high flows in 2018, FWS recommends that Eagle Creek Hydro incorporate an additional year of reporting for its analysis of forecasted and actual flows released from the Rio Project.

Comments on Requested Study Modifications

In its reply comments, Eagle Creek Hydro states that it now provides the hourly and daily average flow forecasts from the Mongaup River to the River Master on a rolling 5-day basis, and indicates that it is actively coordinating with the River Master regarding content of the forecasts. Historically, Eagle Creek Hydro provided a 3-day forecast of its planned releases.

[9] Appendix F of the study report at pages 48-50.

Discussion and Staff Recommendation

Eagle Creek Hydro voluntarily provides the River Master with flow forecast information from the Mongaup River so the River Master can consider these flows as it directs releases from other reservoirs in the Delaware Basin to meet its flow management objectives. As part of this study, Eagle Creek Hydro compared forecasted to actual flows released from the Rio Project from 2014 through 2017 to determine the accuracy of its flow forecasts. FWS does not show good cause for modifying this study because it is unclear how the format of the report or high flows in 2018 could influence the accuracy of Eagle Creek Hydro's flow forecasts for the Rio Project (section 5.15(d)). Furthermore, accuracy of Eagle Creek Hydro's flow forecasts, while potentially useful to the River Master, is not required to meet the goals and objectives of this study, nor is this information necessary for our analysis as there is no nexus between the accuracy of the forecasts and effects of project operation (section 5.9(b)(1); section 5.9(b)(5)).[10] As such, we do not recommend Eagle Creek Hydro conduct an additional year of its flow forecast analysis.

Fisheries Survey Study

Background

The purpose of the Fisheries Survey Study is to supplement existing fishery data collected at the projects since the previous licensing, and to describe current fish populations in riverine and impounded areas at the project. To characterize the occurrence, relative abundance, and size distribution of fish that may be entrained through the powerhouses, the study plan determination required seasonal gill netting in the vicinity of the powerhouses' intakes.[11]

Eagle Creek Hydro compiled the existing fish survey data and collected 11,597 fish using various methods including boat and backpack electrofishing, seine netting, eel pot trapping, and gill netting. Eagle Creek Hydro conducted general gill net surveys in the Toronto (8 sets), Cliff Lake (3 sets), Swinging Bridge (3 sets), and

[10] While the River Master may use information provided by Eagle Creek Hydro in its flow management of the Delaware River and established by the Amended 1954 Supreme Court Decree, the Decree does not specifically require Eagle Creek Hydro to provide flows to satisfy the target flows articulated in the Decree.

[11] Study plan determination at B-19.

Mongaup Falls (3 sets) reservoirs.[12] Eagle Creek notes in the initial study report that it intended to set 8 gill nets in the Swinging Bridge and Rio reservoirs but chose to set 3 nets in Swinging Bridge reservoir and 0 nets in Rio reservoir to limit or avoid gill net mortality in these reservoirs. In addition, as required by the study plan determination, Eagle Creek Hydro set two gill nets on six dates from May through October in the Mongaup Falls, Swinging Bridge, and Rio reservoirs in the vicinity of the intakes for the powerhouses.

Requested Study Modification

The New York Department of Environmental Conservation (New York DEC) notes that the general gill net effort was minimal in the Swinging Bridge reservoir and did not occur in the Rio reservoir because of gill net mortality observed at the other reservoirs. New York DEC states that fish mortality from gill nets is acceptable and recommends Eagle Creek Hydro use gill nets to sample deep water and pelagic habitats throughout the Swinging Bridge and Rio reservoirs in 2019.

Comments on Requested Study Modifications

In its reply comments, Eagle Creek Hydro states that its general gill netting effort was reduced following the gill net mortalities at the other reservoirs and concerns regarding high walleye mortality raised by the New York DEC Special Licenses Unit. In addition, Eagle Creek Hydro states that the data collected in 2018, in combination with other existing data, is sufficient to support an analysis of fish entrainment and impingement, flow releases, and reservoir elevation changes at the projects.

Discussion and Staff Recommendation

The study plan determination required that the study use new and existing data to characterize the current fish species composition, relative abundance, habitat use, size class and structure, and condition factor of fish in project-affected waters, but did not require specific gill net methodologies or sampling effort for a general gill net survey of the reservoirs. However, seasonal gill net surveys conducted at the projects' intakes, would help characterize the fish communities present in deep water habitat at each project. All gill net surveys conducted at the Toronto, Cliff Lake, and Mongaup Falls reservoirs, and the intake gill net surveys conducted in the Swinging Bridge and Rio reservoirs were performed using accepted methods for gill netting. Although Eagle Creek Hydro did not set gill nets in Rio reservoir as part of its general reservoir fish survey effort, Eagle Creek Hydro did set gill nets in Rio reservoir near the powerhouse

[12] Each gill net was "set" overnight perpendicular to the shoreline at a depth of 15 to 40 feet for a total of 11 to 16 hours.

intake periodically during May through October of 2018. In addition, Eagle Creek Hydro used other sampling methods in Rio reservoir, including electrofishing, to supplement existing information regarding the composition of the reservoir fish community. The results of Eagle Creek Hydro's gill netting surveys combined with other fish survey efforts and historical fish survey data, are adequate to characterize the fish communities in the reservoirs, as required by the approved study, and provide the information needed for our analysis of project effects (section 5.9(b)(4); section 5.9(b)(5)). For these reasons, we do not recommend Eagle Creek Hydro conduct additional gill net surveys in Swinging Bridge or Rio reservoirs.

Water Quality Study

Background

The purpose of the Water Quality Study is to supplement existing water quality data and evaluate project effects on water quality, such as effects of peaking operations on water temperature and dissolved oxygen concentration downstream of the powerhouses. In addition, the study plan determination required Eagle Creek Hydro to evaluate the specific effects of the Rio Project's peaking operation on temperature in the Delaware River downstream of the confluence with the Mongaup River.

Eagle Creek Hydro's Water Quality Study included: (1) continuous water temperature and dissolved oxygen monitoring at 18 locations within the projects' riverine reaches and reservoirs; (2) weekly (7 to 10 days) thermal and chemical profile monitoring in the reservoirs; (3) discrete water quality sampling at each continuous monitoring site during data downloads; and (4) temperature monitoring in the Delaware River.

Between June 7 and June 13, 2018, Eagle Creek Hydro deployed 12 water temperature loggers in the Delaware River set to record every 15 minutes. On July 11, 2018, Eagle Creek Hydro successfully retrieved 11 of 12 temperature loggers, downloaded the data, and re-deployed the loggers. The remainder of the study season was subject to above average precipitation and high flows in the Delaware River; thus, Eagle Creek Hydro was unable to retrieve the temperature loggers. Assuming the loggers continued to collect data and can be located, Eagle Creek Hydro proposes to retrieve the temperature loggers during a period of low flow in the summer of 2019 and incorporate the temperature data into its updated study report.

Additional Water Quality Study

Requested Study Modification

FWS and New York DEC state that the study was conducted under anomalous environmental conditions because of the high flows in 2018. New York DEC also states that the study was not conducted as approved because multiple water quality loggers located in the vicinity of the projects (i.e., reservoirs and riverine reaches affected by the projects in the Mongaup Basin) failed and Eagle Creek Hydro did not adequately calibrate the water quality loggers during the study period. New York DEC also points out several infrastructure changes that occurred since the previous licensing and expresses concern that the new low flow turbine (to be installed in summer of 2019) at the Swinging Bridge Project may alter water quality conditions downstream of the Swinging Bridge Project. As such, FWS and New York DEC recommend that Eagle Creek Hydro repeat the water quality study.

Comments on Requested Study Modifications

In its reply comments, Eagle Creek Hydro states that the water quality data collected throughout the Mongaup River in 2018, the water quality data collected annually by Eagle Creek Hydro downstream of the powerhouses, and historical data collected during the previous licensing provides a comprehensive data set to understand overall trends in water quality. Further, Eagle Creek Hydro suggests that the wet conditions of 2018 are irrelevant as the projects operated as they normally would by providing minimum flows from each project.

As for failure of some loggers located in the vicinity of the projects, Eagle Creek Hydro notes that water quality loggers were deployed at 18 locations and collected data at 15-minute intervals for 6 months with only three exceptions in which data was unavailable for short periods of time. In addition, Eagle Creek Hydro states that the water quality loggers were calibrated according to the manufacturer's operating manual.

Concerning infrastructure changes, Eagle Creek Hydro states that New York DEC's comments on previous infrastructure changes (decommissioning of unit 1 at the Swinging Bridge Project and installation of the minimum flow powerhouse at the Rio Project) are irrelevant to the 2018 water quality data collection. Eagle Creek Hydro notes that the new minimum flow unit under construction at the Swinging Bridge Project utilizes the same intake and penstock as the existing unit 2 powerhouse and that Eagle Creek Hydro is required to monitor flow and water quality downstream of the Swinging Bridge powerhouses as a condition of its amended license. Finally, Eagle Creek Hydro states that the new minimum flow unit at the Swinging Bridge Project would not be

operational until the third quarter of 2019; therefore, additional water quality monitoring in 2019 would be irrelevant and unnecessary.

Discussion and Staff Recommendation

The water quality study was conducted during a wet year, the second wettest year on record according to flow data at the USGS gage at Montague, New Jersey. It is possible that high flows in the Mongaup River altered stratification patterns and water quality downstream of the projects' reservoirs relative to a normal year. However, the goal of this study is to supplement existing water quality data which includes many years of continuous water quality monitoring data (temperature and dissolved oxygen) collected downstream of each project. As summarized in the Pre-application document (PAD), there are multiple years of continuous water quality data available to describe water quality downstream of the powerhouses.[13] While Eagle Creek Hydro states that a comprehensive water quality data set is available and includes a brief written summary comparing the previous water quality data to data collected in 2018, the summary provided in the study report does not adequately consider the existing water quality dataset or evaluate project operational effects on water quality, as required in the approved study plan (section 5.15(d)(1)).

Eagle Creek Hydro should review the previous dissolved oxygen and temperature monitoring data, summarize any deviations from the existing license requirements for water quality, and provide graphs, consistent with its effort for the 2018 water quality study, that show continuous monitoring data in relation to project operation for the most recent dry year and normal year so that we can adequately evaluate project effects across different hydrologic regimes. We acknowledge that less data is available to describe stratification patterns in the reservoirs; however, effects of stratification can be inferred from the water quality data at riverine sites downstream of the powerhouses (e.g., cold, oxygen-depleted water discharged from the powerhouse indicates that the intake is drawing water from below the thermocline and chemocline). As such, we recommend that Eagle Creek Hydro provide an analysis of project operation on dissolved oxygen and temperature downstream of the powerhouses during a dry and normal year in its updated study report. In Black Lake Creek, the 2018 water quality data describes potential effects of project operation under an adequate range of conditions, as minimum flows were released from Toronto and Cliff Lake reservoirs during the warm summer months with water drawn from colder, oxygen depleted zones for at least part of the summer. In Black Brook, the Black Brook Dam is not operational and the existing water quality data demonstrates that there is little difference in water quality upstream and downstream of

[13] See pages 42-47 of the PAD, filed March 30, 2017.

Black Brook Dam.[14] As such, additional data collection in Black Lake Creek and Black Brook is not warranted.

Logger malfunction or failure is not uncommon during these types of studies and Eagle Creek Hydro adequately accounted for potential malfunctions by retrieving the loggers every 7 to 10 days. This frequent retrieval rate limited the time the loggers were not working to a few, short periods of failed data collection. As for calibrating the loggers, New York DEC's comments are unclear regarding the problem as the study report states that the loggers were calibrated according to the manufacturer's instructions. In addition, Eagle Creek Hydro performed routine maintenance on the loggers (e.g., cleaning) and collected discrete water quality data during logger retrieval that mostly affirms the quality of the continuous data collected by the loggers. While a few data points appear to be the result of fouling and some data was not collected as a result of logger malfunction, these small discrepancies are common during any water quality study. Therefore, additional water quality monitoring is not needed.

As for previous changes to the projects' infrastructure, our analysis will consider the current infrastructure and existing environment as the baseline for which to evaluate potential project effects and environmental measures. In our cumulative effects analysis, changes in project infrastructure and effects on water quality would be considered to the extent that information is available. The addition of a minimum flow unit at the Swinging Bridge Project could alter water quality downstream of the project because minimum flows would not typically be routed through the minimum flow release valve. However, water quality monitoring, as required by the order amending the license for the Swinging Bridge Project, should provide sufficient information for our analysis of the effects of the new minimum flow unit that will be installed.[15] As such, we will consider this water quality monitoring information when it becomes available.

Additional Delaware River Temperature Monitoring

Requested Study Modification

The National Park Service (Park Service) states that the Delaware River temperature monitoring was conducted under anomalous conditions because of unusually

[14] Historically, Black Brook Dam impounded a small reservoir with no useable storage capacity and diverted water to the Mongaup Falls Project powerhouse. Eagle Creek Hydro has not operated this diversion since 1984 when the penstock failed. Black Brook enters the Mongaup River immediately upstream of Rio reservoir.

[15] *See* 165 FERC ¶ 62,104, Order Amending License for the Swinging Bridge Hydroelectric Project No. 10482 (November 19, 2018).

high flows in the Delaware River in 2018. In addition, the Park Service expresses concern that only one month of data has been downloaded and that the remaining data, assuming the loggers can be found, would be skewed because of unusually high flows during the summer of 2018. Further, the Park Service suggests that Eagle Creek Hydro did not follow any existing water quality monitoring procedures for the collection of continuous water quality data. As such, the Park Service recommends that Eagle Creek Hydro repeat the Delaware River temperature monitoring to accomplish the study's objective.

Comments on Requested Study Modifications

In its reply comments, Eagle Creek Hydro states that it will collect the temperature loggers when flows in the Delaware River are low enough to allow safe retrieval. Upon retrieval, Eagle Creek Hydro proposes to incorporate the temperature data in a supplemental filing to the Commission. If the loggers cannot be recovered, Eagle Creek Hydro contends that the existing data set (June 7 to July 11, 2018) is adequate to evaluate the effects of the Rio Project's peaking operation on water temperature in the Delaware River. Eagle Creek Hydro states that flows were relatively low (typically less than 3,000 cfs) during the early study season and the Rio Project typically operated within the capacity of both powerhouses, with few spill events. In addition, Eagle Creek Hydro indicates that releases from the Rio Project are colder than the Delaware River, provide a cool water refuge for fish, and ultimately benefit the Delaware River fish populations. In consideration of this existing benefit, Eagle Creek Hydro states that it is not clear what operational changes would be requested by stakeholders based on the results of the temperature monitoring. In response to the Park Service's comment on the lack of water quality monitoring procedures, Eagle Creek Hydro provided information that describes the calibration, deployment, and download procedures for the study.

Discussion and Staff Recommendation

As discussed above, 2018 was characterized by anomalous high flow conditions in the Delaware River (section 5.15(d)(2)). However, unlike the water quality monitoring data available for the Mongaup Projects, the only information to evaluate effects of the Rio Project on temperature in the Delaware River is the 34 days of data Eagle Creek Hydro collected in 2018. After mid-July 2018, flows in the Delaware River far exceeded the daily median flow throughout the remainder of 2018. As such, even if Eagle Creek Hydro is able to retrieve the data loggers, information during mid-summer low and normal flow periods would not be available and we would not have adequate information to evaluate the effects of the Rio Project on temperature in the Delaware River downstream of the confluence with the Mongaup River.

The 2018 data set shows that when the Rio Project is peaking, water temperature in the Delaware River 1.5 miles downstream of the confluence with the Mongaup River is approximately 2.5 °F colder (up to 6 °F colder) than upstream of the Mongaup River confluence.[16] While there is likely enough data to characterize the effects of the Rio Project during high flows, we cannot discern if the 2018 data characterize effects of the Rio Project during periods of low and normal flow when ambient water temperatures in the Delaware River are high (likely mid-July to early September). As such, additional information during a summer low flow period is needed to evaluate effects of existing project operations and potential license conditions (e.g., flow recommendations) (section 5.9(b)(5)). Therefore, we recommend that Eagle Creek Hydro collect temperature data at 15-minute intervals from July to mid-September 2019, in an attempt to capture data during the summer low and normal flow periods and evaluate the influence of the Rio Project's peaking operation on temperature in the Delaware River.

The 2018 data also shows some across channel variation in temperature indicating that complete mixing of the Mongaup and Delaware River does not occur at 1.5 miles downstream of the confluence. The existing data set demonstrates that mixing is nearly complete, but does not provide information to describe the downstream extent of temperature effects in the Delaware River (section 5.9(b)(1)). As such, we recommend Eagle Creek Hydro deploy a total of four temperature loggers at the following locations: (1) upstream of the Mongaup confluence in thalweg;[17] (2) in the Delaware River at the mouth of the Mongaup River; (3) in the thalweg 1.5 miles downstream of the Mongaup river; and (4) in the thalweg at a location 3 to 4 miles downstream of the Mongaup River. This modification should provide additional information to describe project effects farther downstream, where complete mixing has likely occurred. Eagle Creek Hydro should monitor river flows closely and deploy/retrieve loggers under safe conditions during the time period specified.

Despite the deviation from the study plan caused by anomalous flow conditions in 2018, we find no merit in the Park Service's claim that no water quality monitoring procedures were followed, neither have we identified any issues with the quality of the existing data. Eagle Creek Hydro should continue to use the same calibration and quality control procedures as approved in the study plan determination.

[16] Appendix F of the study report at 50; Figure 5-39, Transect 4-RC.

[17] The thalweg is the lowest point of the channel where flow is typically greatest.

Whitewater Boating Assessment Study

Background

The goal of the Whitewater Boating Assessment Study (Whitewater Study) is to: (1) evaluate the adequacy of existing whitewater boating opportunities at the Rio Project in the 3-mile-long lower Mongaup reach of the Mongaup River (lower Mongaup reach), between the main Rio Project powerhouse and the Mongaup River confluence with the Delaware River;[18] and (2) assess potential whitewater boating opportunities upstream, in the 1.5-mile-long bypassed reach between Rio Dam and the main Rio Project powerhouse.[19]

The approved study plan required Eagle Creek Hydro to conduct a Level 1 analysis that conforms to the methodology outlined in *Flows and Recreation: A Guide to Studies for River Professionals* by Whittaker, Shelby, and Gangemi (Whittaker method),[20] including: (1) a literature review evaluating the physical characteristics of the stream reach, the availability of recreational boating facilities, hydrologic conditions in the reach, and the relationship between flow and recreational boating opportunities; (2) a hydrologic assessment to evaluate existing and potential recreational boating flows in the bypassed reach and the lower Mongaup reach and to identify existing operational

[18] The main Rio Project powerhouse is located approximately 8,000 feet downstream from the Rio Dam and is supplied with water from the project's reservoir by a 7,000-foot-long penstock. Water is released into the Mongaup River via the tailrace. Whitewater boating occurs in the lower Mongaup reach through one biweekly whitewater boating flow release from the powerhouse. The flow releases occur between April 15 and October 15, with releases alternating between Saturdays and Sundays. The biweekly flow releases also alternate between 435 cfs (1 unit) or 870 cfs (2 unit) flows from the main Rio Project powerhouse's two turbines.

[19] Scheduled whitewater boating releases do not occur in the bypassed reach; however, the bypassed reach can be boated during spill events. Eagle Creek Hydro currently releases a minimum flow of 100 cfs is in the bypassed reach via the minimum flow powerhouse, which is located approximately 300 feet downstream of the Rio Dam. Before the construction of the minimum flow powerhouse, a 3-foot-diameter outlet pipe at the base of the dam supplied the minimum flow to the bypassed reach. Although the outlet pipe is no longer used, it can still be operated.

[20] Whittaker, Shelby, and Gangemi (2005) describe a phased approach consisting of three levels: (1) a Level 1 desktop analysis; (2) a Level 2 on-land feasibility assessment and/or on-water single-flow feasibility assessment; and (3) a Level 3 intensive study, including multiple flows.

constraints on flow regimes and recreational boating flows; (3) boater interviews to identify minimally acceptable or optimal boating flows, the adequacy of any existing release schedules, and the adequacy of existing flow information; (4) an evaluation of existing facilities, as part of the Recreation Facility Inventory; and (5) a report with the results, including recommendations regarding the necessity of a Level 2 and/or Level 3 study.

Requested Study Modifications

American Whitewater, Appalachian Mountain Club, and Kayak and Canoe Club of New York (boating groups) state that the Level 1 analysis was not completed as required by the approved study plan. Specifically, the boating groups state that the Whitewater Study failed to adequately describe whitewater boating conditions in the bypassed reach because the boaters who were interviewed were either unable to identify minimum or optimal flows or provided ambiguous flow descriptions. The boating groups state that the Whittaker method requires a Level 2 or 3 assessment if the Level 1 assessment fails to adequately describe whitewater boating conditions, including minimum and optimal flows. Therefore, the boating groups recommend that the Whitewater Study be modified to include a Level 2 and Level 3 assessment of the bypassed reach. Specifically, the boating groups request: (1) an on-land feasibility assessment, which requires observing the bypassed reach from land to determine the feasibility and potential quality of boating opportunities, and estimating boating flow ranges; (2) an on-water single flow assessment, which requires boating the bypassed reach at 250 cfs, the maximum flow that can be produced using the minimum flow powerhouse and outlet pipe; and (3) an on-water multiple flow assessment, which would require boating the bypassed reach at multiple flows, based on the ability of the Eagle Creek Hydro to provide controlled spillage from Rio Dam into the bypassed reach.

Comments on Requested Study Modifications

In its reply comments, Eagle Creek Hydro states that additional Level 2 or Level 3 assessments of the bypassed reach are not needed because of the adequacy of existing data from the Level 1 assessment, and because of the operational, mechanical, and safety constraints of Rio Dam. Specifically, Eagle Creek Hydro states that because Rio Dam does not have a gate structure that can provide controlled flows, additional flows could only be provided by overtopping the dam, which requires continuously monitoring and adjusting upstream releases to avoid overtopping the dam to the point of flashboard failure, which would pose a safety risk to the Whitewater Study participants. Eagle Creek Hydro acknowledges that an approximately 250 cfs flow could be provided from the minimum flow powerhouse and outlet pipe; however, Eagle Creek Hydro interprets the Level 1 survey results to indicate that the minimum boatable flow in the bypassed

reach is likely 400 cfs, which exceeds the flow releases that the minimum flow powerhouse and outlet pipe can provide.

Discussion and Staff Recommendation

The Whittaker method states that the decision to proceed beyond a Level 1 assessment rests on the answers to four questions: (1) are there recreation opportunities on the river that depend on flow; (2) are recreation opportunities that depend on flow affected by project operation; (3) are these recreation opportunities "important" relative to other resources or foregone power generation; and (4) does the Level 1 information precisely define flow ranges and potential project effects for each recreation opportunity? The Whitewater Study report provides information to evaluate questions 1-3. Specifically, the report concludes that whitewater boating opportunities exist within both the lower Mongaup reach and the bypassed reach, and that they are dependent on releases from the main Rio Project powerhouse and spill events over Rio Dam, respectively. These opportunities are affected by the project's peaking operation and by operating conditions that provide infrequent spill events over Rio Dam. The report also concludes that the existing whitewater releases provide whitewater boating opportunities that are unique to the region and valued by boaters and boating groups. The report does not, however, provide enough information to evaluate question 4. As stated in the study report, "it is not clear from the survey results what the minimum or optimum boating flows are" in the bypassed reach. Although Eagle Creek Hydro states that the survey responses from the 23 boaters who had boated the bypassed reach can be interpreted to suggest flows greater than 400 cfs are boatable, we find that the boaters' responses to the open-ended questions were too ambiguous to clearly define a minimum or optimal boatable flows in the bypassed reach. For example, most boaters responded to questions asking for their estimate of minimum or optimal flows in the bypassed reach in terms of one-unit or two-unit flows. These are terms that only apply to the one-unit and two-unit releases from the main Rio Project powerhouse's two turbines for the lower Mongaup reach, and don't describe flows within the bypassed reach that could have been released from the minimum flow powerhouse, along with any spill occurring over the Rio Dam.

Because the survey failed to clearly determine the minimum and optimal flows for whitewater boating in the bypassed reach, as required by the study plan determination (section 5.15(d)(1)), we cannot evaluate if scheduled releases in the bypassed reach could reasonably provide additional boating opportunities. A Level 3 multiple-flow assessment is not recommended because providing flow over the Rio Dam flashboards would be difficult due to operational, mechanical, and safety constraints. However, a Level 2 single-flow assessment of the 250 cfs, which could be provided from the minimum flow powerhouse (maximum capacity of 120 cfs) and the outlet pipe (maximum discharge of 130 cfs), would provide data on minimal and optimal boatable flow ranges in the bypassed reach without requiring spill over the dam. Therefore, we recommend

modifying the Whitewater Study to include a Level 2 single-flow assessment, developed in coordination with the boating groups.

An on-land boating feasibility assessment should be conducted first, to determine if the bypassed reach is boatable at 250 cfs. The study participants boating the reach should determine if it is safe to proceed to an on-water assessment. If safe boating is feasible, then an on-water assessment should be conducted. In order to evaluate the effects of a 250 cfs release from the outlet pipe and minimum flow powerhouse on the bypassed reach and on the existing whitewater boating releases on the lower Mongaup reach, the on-water assessment should include the bypassed reach and the lower Mongaup reach. The flow releases should include: (1) 250 cfs released into the bypassed reach with no releases from the main Rio Project powerhouse; and (2) 250 cfs released into the bypassed reach and a one-unit release from the main Rio Project powerhouse. Boaters should be asked to evaluate the bypassed reach, the lower Mongaup reach, and the combined reaches under both flow release scenarios.

The updated study report should describe, to the extent possible: (1) the feasibility and quality of boating in the bypassed reach with a 250 cfs release; (2) the effect of a 250 cfs release on the lower Mongaup reach under each flow release scenario; and (3) the potential minimum and optimal flows in the bypassed reach. The updated study report should provide quantitative and qualitative results of the on-land and, if possible, on-water assessment and the boaters' evaluations. Also, the updated study report should include a discussion of any operational constraints and any potential effects each flow release scenario may have on other resources.

Cultural Resources Study

Background

The goal of the Cultural Resources Study is to identify properties eligible for, or listed on, the National Register of Historic Places (National Register or historic properties) and that may be affected by the Mongaup River Projects' operation and maintenance within the area of potential effects (APE) for each project. The goal of the Cultural Resources Study is also to assess specific project-related effects to any historic property within each project's APE.

As part of the study plan determination, Eagle Creek Hydro was required to conduct a comprehensive cultural resources survey and inventory within each project's APE. The survey was to include a systematic pedestrian survey within all accessible areas of the APE for each project.

Discussion and Staff Recommendation

The National Historic Preservation Act and the National Environmental Policy Act require that all historic properties within the APE be identified. Only after historic sites are identified and located, can project-related direct and indirect effects be accurately assessed.[21]

As part of the inventory survey, Eagle Creek Hydro conducted field reconnaissance observations at the projects to verify historic or archaeological sites identified it its literature review. Eagle Creek Hydro conducted field reconnaissance at the Rio and Mongaup reservoirs. However, the Swinging Bridge Project has three reservoirs, Swinging Bridge, Toronto, and Cliff Lake, and Eagle Creek Hydro only conducted field reconnaissance at the Swinging Bridge reservoir. In the Cultural Resources Study report, Eagle Creek Hydro states that field reconnaissance was not conducted at Toronto and Cliff Lake reservoirs because the Swinging Bridge reservoir was representative of the project's reservoirs. In addition, Eagle Creek Hydro did not conduct a systematic pedestrian survey within all accessible areas of the projects' APE, as required by the approved study plan (section 5.15(d)(1)).[22] For example, instead of conducting a systematic pedestrian survey, Eagle Creek Hydro observed the Mongaup Project reservoir from a public boat launch site. Accordingly, we recommend that Eagle Creek Hydro conduct a systematic pedestrian survey, including shovel testing, within all accessible areas of each project's APE. All archaeological sites should be recorded, mapped, and photographed in compliance with standards established by the New York SHPO. The study report should be provided to the New York SHPO for its review and comment.

[21] *See* FirstLight Hydro Generating Company, 162 FERC ¶ 61,235 (2018).

[22] As part of the systematic pedestrian survey, all archaeological sites identified were to be recorded, mapped, and photographed in compliance with standards established by the New York State Historic Preservation Office (New York SHPO).

APPENDIX C

STAFF RECOMMENDATIONS ON REQUESTED NEW STUDIES

Fish Passage Feasibility Study

Requested New Study

FWS states that the information generated by the Fish Entrainment/Impingement Study and the Fisheries Survey Study, which documented the presence of American eel and American shad downstream of the Rio Project, warrants a fish protection and upstream and downstream passage feasibility study. FWS requests that Eagle Creek Hydro conduct the study to evaluate fish passage solutions for all fish species at the projects, with special emphasis on American eel. FWS states that passage options for American shad should be evaluated at the Rio Project only, as Mongaup Falls is the natural barrier for upstream migration of this species. As part of this study, FWS requests that Eagle Creek Hydro evaluate entrainment and mortality at the new minimum flow powerhouse for the Swinging Bridge Project, as no information on this unit was provided in the study report.

Comments on Requested New Study

Eagle Creek Hydro states that a fish passage study is premature at this time because it is unknown if potential protection, mitigation, and enhancement measures for fish passage would be recommended by stakeholders. Eagle Creek Hydro indicates that limited habitat for American shad is available upstream of the Rio Project, and that introducing American eel upstream of the projects may have negative effects on alewife. Eagle Creek Hydro also questions the need for an evaluation of entrainment and mortality at the proposed minimum flow powerhouse for the Swinging Bridge Project because there are no migratory fish species present and existing entrainment mortality information is available from the Fish Entrainment/Impingement Study and an entrainment study conducted at the projects in 1992 and 1993. In addition, Eagle Creek Hydro states that because the powerhouse is under construction, if an evaluation was necessary, it would be premature because the operational specifications of the unit are unknown at this time.

Discussion and Staff Recommendation

The Fisheries Survey Study confirmed the presence of American eel and American shad downstream of the Rio Project; thus, a passage feasibility study may be appropriate as the Rio Project prevents upstream migration of diadromous species (section 5.15(e)(4)). While Eagle Creek Hydro highlights some potential limitations and negative effects of passing American shad and American eel upstream of the projects,

fishery management agencies have nevertheless expressed an interest in providing upstream passage for these species at the projects. In addition, we would need information from a feasibility study to evaluate the potential effects and costs of passing migratory fish upstream and downstream of the projects. As such, we recommend that Eagle Creek Hydro conduct a fish passage feasibility study focused on reasonable options to achieve the upstream and downstream passage of American eel at all projects and American shad at the Rio Project, and include a fish passage feasibility report in its updated study report.

After consultation with FWS and New York DEC, Eagle Creek Hydro should identify potential fish passage and protection measures to evaluate at each development. If Eagle Creek Hydro does not evaluate a particular fish passage measure requested by the agencies, it should explain its rationale for not doing so in the updated study report. The fish passage feasibility study report should include: (1) a discussion of existing passage routes and mortality; (2) potential measures to achieve safe upstream and downstream passage and fish protection; (3) potential effects of introducing migratory fish upstream of the Mongaup Projects on the resident fish community; and (4) cost estimates to install, operate, and maintain the fish passage measures.

Entrainment and mortality at the new minimum flow unit at the Swinging Bridge Project is unknown. The unit should be installed and operational in the third quarter of 2019; and therefore, Eagle Creek Hydro should have all of the information necessary to evaluate entrainment for this unit prior to the submission of its updated study report. The installation and operation of this unit constitutes a material change in environmental conditions (section 5.15(d)(2)). As such, we recommend that Eagle Creek Hydro evaluate entrainment and impingement and estimate mortality for this unit as it did for other units at the Mongaup Projects and file the results with its updated study report as an addendum to the Fish Entrainment/Impingement Study.

Instream Flow Study

In lieu of conducting a new instream flow study, Eagle Creek Hydro proposed, and the study plan determination approved, a Bypass/Baseflow Transect Evaluation Study. The purpose of this study is to determine whether the 1988 Mongaup Basin Instream Flow Study (1988 flow study), conducted during the previous licensing for the Mongaup River Projects, accurately represents baseline conditions as they exist today. The study plan determination concluded that the 1988 flow study provides the information needed to evaluate potential effects on project-affected stream reaches, provided that the study is still representative of current conditions. Eagle Creek Hydro completed the Bypass/Baseflow Transect Evaluation Study, which included resurveying cross-sectional transects at 15 locations that were surveyed in 1988 and comparing channel morphology by overlaying the 1988 and 2018 transects. In addition, Eagle Creek

Hydro compared substrate along each transect and mapped substrates and mesohabitats near the transect locations and other portions of the project-affected stream reaches.

Requested New Study

FWS states that the results of the Bypass/Base Flow Transect Evaluation Study show clear evidence of channel changes (e.g., aggradation and channel widening at some transects) in the Mongaup River system and Black Lake Creek. FWS provides several examples from the transect data to support its claim and states that the 1988 flow study is not representative of current conditions and is not suitable to determine suitable flow recommendations for the Mongaup River Projects. As such, FWS recommends that Eagle Creek Hydro conduct a new flow study to determine if the existing minimum flow releases at each project are appropriate as outlined in its original study request. FWS indicates that an instream flow incremental methodology study or a Delphi study may be acceptable.

Comments on Requested New Study

Eagle Creek Hydro explains that no permanent benchmarks were established for the 1988 flow study, and that longitudinal transect locations for the Bypass/Baseflow Transect Evaluation Study were approximately located according to reference points (e.g., bridge crossings), written descriptions, and maps provided for the 1988 study. As such, Eagle Creek Hydro states that although an exceptional effort was made to re-survey transects from the 1988 study and minimize sources of variability, a direct quantitative comparison between the 1988 transects and the 2018 transects is unreasonable because the transects are not surveyed to any precise longitudinal, vertical, or horizontal reference points. Eagle Creek Hydro states that while it may not be possible to quantify the exact extent of geometric changes along transects, the transect data in combination with a comparison of substrate, mesohabitat maps, photos, and aerial images indicate that generally, few, localized changes in channel morphology have occurred since the 1988 study and that the 1988 study is representative of existing conditions.

Discussion and Staff Recommendation

While FWS highlights evidence from the transect overlays that channel morphology and substrate have changed at some locations, a quantitative comparison of channel width, depth, and other metrics is not meaningful because of the inherent variability of comparing transects that are in the same approximate location, but are not surveyed to any local benchmark. In addition, a review of the mesohabitat maps, aerial images, and substrate information, together with a visual comparison of all of the transect overlays, indicates that the Mongaup River and other project-affected reaches are generally stable and sufficiently similar to the conditions described in the 1988 study.

Although some relatively minor changes in channel morphology and substrate have occurred at some locations over the last 30 years, the results of the Bypass/Baseflow Transect Evaluation do not indicate a shift in aquatic habitat has occurred that would invalidate application of the 1988 study to the existing conditions of the project-affected reaches. Therefore, we find that FWS's recommendation for a new study does not identify significant new information material to an evaluation of minimum flows at the projects (section 5.15(e)(4)), and we do not recommend Eagle Creek Hydro conduct a new instream flow study.

E-file Submission

July 31, 2019

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

Subject: **Swinging Bridge Hydroelectric Project (FERC No. P-10482-117)**
Mongaup Falls Hydroelectric Project (FERC No. P-10481-067)
Rio Hydroelectric Project (FERC No. P-9690-112)
Initial Study Report Supplement

Dear Secretary Bose:

Eagle Creek Hydro Power, LLC, Eagle Creek Water Resources, LLC, and Eagle Creek Land Resources, LLC (collectively "Eagle Creek") are the owners and operators of the Swinging Bridge, Mongaup Falls, and Rio Hydroelectric Projects (collectively "Mongaup River Hydroelectric Projects" or "Projects"). The Mongaup River Hydroelectric Projects are located on the Mongaup River in Sullivan and Orange Counties, New York, and are licensed by the Federal Energy Regulatory Commission ("FERC" or "Commission").

The FERC licenses for the Mongaup River Hydroelectric Projects expire on March 31, 2022, and Eagle Creek is pursuing new licenses for each of the Projects. On March 30, 2017, Eagle Creek filed with the Commission Notices of Intent (NOIs) to file a license application for new licenses for the Projects under the Commission's Integrated Licensing Process (ILP).

In accordance with 18 CFR §5.15, Eagle Creek has initiated studies and information gathering activities as provided in Eagle Creek's January 10, 2018 Revised Study Plan and as approved and modified by the Commission's Study Plan Determination (SPD) issued on February 9, 2018. Pursuant to 18 CFR §5.15(c), Eagle Creek filed the Initial Study Report (ISR) on February 8 2019; however, several of the first season studies were on-going when the ISR was filed. Therefore, Eagle Creek is herein submitting an ISR Supplement with the study results associated with the Recreation Facility Inventory, Recreation Use and Needs Assessment, and Reservoir Surface Area Assessment Study Report; the Bald Eagle Study Report; and the updated Special-Status Species Survey Study Report.

In addition to filing the aforementioned study reports with the Commission at this time, Eagle Creek will include these study reports in the Updated Study Report (USR) to be filed with the Commission by February 9, 2020 and will present the results of these studies during the USR Meeting to be conducted by February 24, 2020.

In addition to filing a copy of the ISR Supplement with the Commission, Eagle Creek is distributing this cover letter to the parties listed on the enclosed distribution list. For parties on the distribution list who have provided an email address, Eagle Creek is distributing this cover letter via email, otherwise Eagle Creek is distributing this cover letter via mail.

A copy of the ISR Supplement may be obtained electronically through FERC's eLibrary system at https://elibrary.ferc.gov/idmws/search/fercgensearch.asp under docket numbers P-10482, P-10481, and P-9690. In addition, a copy of the ISR may be obtained through Eagle Creek's website at https://www.eaglecreekre.com/facilities/operating-facilities/mongaup-river-hydroelectric-system/mongaup-river-relicensing-information.

If there are any questions regarding this letter or the ISR Supplement, please do not hesitate to contact Michael Scarzello with Eagle Creek at (973) 998-8400 or Jim Gibson with HDR at (315) 414-2202.

Sincerely,
Eagle Creek (Licensees)

Mr. Michael Scarzello
Director

cc: Distribution List

Enclosures:
- Recreation Facility Inventory, Recreation Use and Needs Assessment, and Reservoir Surface Area Assessment Study Report
- Bald Eagle Study Report (filed as CUI/Privileged)
- Updated Special-Status Species Survey Study Report (filed as CUI/Privileged)

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E-file Submission

August 1, 2019

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

Subject: Swinging Bridge Hydroelectric Project (FERC No. P-10482-117)
Mongaup Falls Hydroelectric Project (FERC No. P-10481-067)
Rio Hydroelectric Project (FERC No. P-9690-112)
Fourth Study Progress Report

Dear Secretary Bose:

Eagle Creek Hydro Power, LLC, Eagle Creek Water Resources, LLC, and Eagle Creek Land Resources, LLC (collectively "Eagle Creek") herein submit the fourth study progress report for the Swinging Bridge, Mongaup Falls, and Rio Hydroelectric Projects (collectively "Mongaup River Hydroelectric Projects" or "Projects"). The Mongaup River Hydroelectric Projects are located on the Mongaup River in Sullivan and Orange counties in New York, and are licensed by the Federal Energy Regulatory Commission ("FERC" or "Commission"). The FERC licenses for the Mongaup River Hydroelectric Projects expire on March 31, 2022, and Eagle Creek is pursuing new licenses for each of the three Projects. On March 30, 2017, Eagle Creek filed with the Commission Notices of Intent (NOIs) to file a license application for new licenses for the Projects.

Consistent with the Commission's Integrated Licensing Process (ILP) and 18 CFR §5.13, Eagle Creek filed the Revised Study Plan (RSP) with the Commission on January 10, 2018, and the Commission issued the Study Plan Determination (SPD) on February 9, 2018. The Commission's SPD required Eagle Creek to perform 16 first season studies. Accordingly, in April 2018, Eagle Creek commenced the first season studies, 13 of which were completed in 2018 and 5 of which continued into 2019. Eagle Creek presented the available results of the first season studies in the Initial Study Report (ISR) filed with the Commission on February 8, 2019 and during the ISR Meeting held on February 13-14, 2019. On March 11, 2019, Eagle Creek filed with the Commission the ISR Meeting Summary along with the final Whitewater Boating Assessment Study Report.

Subsequent to filing the ISR Meeting Summary, relicensing stakeholders filed comments on the ISR and/or new study requests. On May 10, 2019, Eagle Creek filed responses to the stakeholder comments and new study requests. On June 10, 2019, the Commission issued the Second SPD, which required Eagle Creek to complete the on-going first season studies and perform several second season studies.

Eagle Creek herein submits the fourth study progress report for the period from November 1, 2018 through July 31, 2019 for the Mongaup River Hydroelectric Projects. The enclosed table (report) provides a list of the approved studies and associated status of progress as well as any modifications to the approved methodologies.

In addition to filing a copy of this letter with the Commission, Eagle Creek is distributing this letter to the parties listed on the enclosed distribution list. For parties who have provided an email address, Eagle Creek is distributing this letter via email, otherwise Eagle Creek is distributing this letter via mail.

If there are any questions regarding this information, please do not hesitate to contact Michael Scarzello with Eagle Creek at (973) 998-8400 or Jim Gibson with HDR at (315) 414-2202.

Sincerely,
Eagle Creek (Licensees)

Mr. Michael Scarzello
Director

Attachments (2)

cc: Distribution List

FOURTH STUDY PROGRESS REPORT

Mongaup River Hydroelectric Projects Fourth Study Progress Report (November 1, 2018 through July 31, 2019)			
No.	**Study**	**Status**	**Modifications to Methodology**
1	Operation Model / Delaware River Flow Study	**First Season Study:** • Consistent with the approved study plan, the study was completed in 2018 with results provided in the Initial Study Report (ISR) filed with the Commission on February 8, 2019. **Second Season Study:** • Eagle Creek will analyze sub-hourly effects of Rio Project operation on flows in the Delaware River downstream of the confluence with the Mongaup River during low, normal, and high flow in the Delaware River. The periods analyzed will overlap with the water temperature data collected by Eagle Creek from the Delaware River in 2018 and 2019. • Eagle Creek will convene an Operations Model Technical Conference with invited relicensing stakeholders by September 30, 2019 to facilitate the timely identification and evaluation of alternative operational scenarios to include in the FLA. On July 19, 2019, Eagle Creek emailed relicensing stakeholders with a proposed date of September 4, 2019 to convene the technical conference. • Study results will be provided in the Updated Study Report (USR) to be filed with the Commission by February 9, 2020, or sooner as available.	None.
2	Aquatic Habitat Assessment Study	**First Season Study:** • Multi-beam and side-scan sonar surveys were performed on each reservoir in June 2018. • Due to consistent precipitation received at the Projects in the fall 2018, the reservoir water surface elevations remained high and, therefore, supplemental field observations of the impoundment fluctuation zones could not be completed prior to arrival of winter weather conditions. • Supplemental field observations of the Swinging Bridge Reservoir, Cliff Lake Reservoir, and Rio Reservoir were performed during the week of May 13, 2019. • Supplement field observations of the Toronto Reservoir and Mongaup Falls Reservoirs are scheduled to occur in August 2019, contingent upon suitable flows and reservoir surface water	None.

Mongaup River Hydroelectric Projects Fourth Study Progress Report (November 1, 2018 through July 31, 2019)			
No.	**Study**	**Status**	**Modifications to Methodology**
		elevations. • Study results will be provided in the USR to be filed with the Commission by February 9, 2020, or sooner as available.	
3	Fisheries Survey Study	**First Season Study:** • Consistent with the approved study plan, the study was completed in 2018 with results provided in the ISR filed with the Commission on February 8, 2019.	None.
4	Fish Entrainment/ Impingement Study	**First Season Study:** • Consistent with the approved study plan, the study was completed in 2018 with results provided in the ISR filed with the Commission on February 8, 2019. **Second Season Study:** • Pursuant to the Commission's Second SPD issued on June 10, 2019, Eagle Creek will evaluate entrainment and impingement and estimate mortality for the new (currently under construction) minimum flow unit (Unit No. 3) at the Swinging Bridge Development. • Study results will be provided in the USR to be filed with the Commission by February 9, 2020, or sooner as available.	None.
5	Water Quality Study	**First Season Study:** • Consistent with the approved study plan, the majority of the study was completed in 2018 with results provided in the ISR filed with the Commission on February 8, 2019. • High flows in the Delaware River experienced from mid-August through November 2018, precluded retrieval and data downloads of the twelve water temperature monitors deployed in the Delaware River in June 2018. Therefore, the ISR provided an evaluation of water temperature data collected in the Delaware River from mid-June 2018 to mid-July 2018. • On June 27, 2019, six of the twelve water temperature monitors were able to be retrieved from the Delaware River. On July 16, 2019, one additional water temperature monitor was able to be retrieved from the Delaware River. Eagle Creek believes the remaining five monitors deployed in June 2018 were likely lost due to high flows, winter weather conditions, and/or discovered and taken by others.	None.

No.	Study	Status	Modifications to Methodology
		• Study results from the available water temperature data collected from the Delaware River between mid-July and November 2018 is anticipated to be filed with the Commission by August 31, 2019 as well as provided in the USR to be filed with the Commission by February 9, 2020. **Second Season Study:** • Pursuant to the Commission's Second SPD issued on June 10, 2019, Eagle Creek will collect additional water temperature data from four locations in the Delaware River from July 1, 2019 through September 15, 2019. • On June 27, 2019, Eagle Creek deployed four water temperature monitors in the Delaware River. • On July 16, 2019, Eagle Creek downloaded data from the four water temperature monitors in the Delaware River. • Study results will be provided in the USR to be filed with the Commission by February 9, 2020, or sooner as available.	
6	Macroinvertebrate and Mussel Survey	**First Season Study:** • Consistent with the approved study plan, the study was completed in 2018 with results provided in the ISR filed with the Commission on February 8, 2019.	None.
7	Recreation Facility Inventory, Recreation Use and Needs Assessment, and Reservoir Surface Area Assessment Study	**First Season Study:** • Study results were filed with the Commission on July 31, 2019 and will be provided in the USR to be filed with the Commission by February 9, 2020.	None.
8	Whitewater Boating Assessment Study	**First Season Study:** • On January 15, 2019, Eagle Creek distributed the draft Whitewater Boating Assessment Study Report to stakeholders for a 30-day comment period. • On February 8, 2019, Eagle Creek filed the ISR with the Commission, which included the draft Whitewater Boating Assessment Study. • Stakeholders provided comments on the draft study report, which	None.

No.	Study	Status	Modifications to Methodology
		were addressed by Eagle Creek. • On March 11, 2019, Eagle Creek filed with the Commission the final Whitewater Boating Assessment Study Report. **Second Season Study:** • Pursuant to the Commission's Second SPD issued on June 10, 2019, Eagle Creek will conduct a Level 2 single-flow assessment, developed in coordination with the boating groups, to evaluate the boatability of 250 cubic feet per second (cfs) in the bypassed reach as well as 250 cfs plus a one unit release downstream of the Rio Main Powerhouse. • Eagle Creek will provide a draft study plan to stakeholders for a 30-day comment period. • Upon finalization of the study plan, Eagle Creek will schedule the Level 2 assessment in late summer or early fall 2019 in coordination with boating groups and contingent upon flows and water availability. • Study results will be provided in the USR to be filed with the Commission by February 9, 2020, or sooner as available.	
9	Shoreline Management Assessment Study	**First Season Study:** • Consistent with the approved study plan, the study was completed in 2018 with results provided in the ISR filed with the Commission on February 8, 2019.	None.
10	Cultural Resources Study	**First Season Study:** • The study was completed in 2018 with results provided in the ISR filed with the Commission on February 8, 2019. **Second Season Study:** • Pursuant to the Commission's Second SPD issued on June 10, 2019, Eagle Creek will perform an additional cultural resources evaluation within each Project's area of potential effects (APE). • Study results will be provided in the USR to be filed with the Commission by February 9, 2020.	• Field reconnaissance was not conducted at the Toronto and Cliff Lake Reservoirs since the pre-dam shoreline of Black Lake Creek was a great distance from the modern-day shoreline. • Reservoirs were observed from public access areas.
11	Black Brook Dam Decommissioning Study	**First Season Study:** • The study was completed in 2018 with results provided in the ISR filed with the Commission on February 8, 2019.	• Given that design drawings were obtained that provide the requested information regarding

No.	Study	Status	Modifications to Methodology
			dimensions of the dam and the associated facilities, borings were not advanced through the dam to determine the dimensions. • Given that the volume of the sediment and gravel that may have accumulated within the footprint of the former impoundment was determined based on field observations and desktop evaluation, transects to define the volume and characteristics of the material was not performed. • Two composite sediment samples to further characterize the material upstream of the dam were not collected. If necessary, Eagle Creek believes that such information would be collected in support of a decommissioning scenario.
12	Special-Status Species Survey Study	**First Season Study:** • The study was completed in 2018 with results provided in the ISR filed with the Commission on February 8, 2019. **Second Season Study:** • Subsequent to filing the ISR with the Commission on February 8, 2019, the U.S. Fish and Wildlife Service (USFWS) issued comments on the ISR via letter dated April 10, 2019 requesting Eagle Creek perform additional field surveys for small whorled pogonia during the plant's blooming season (e.g., May to mid-June). • Accordingly, on May 30 and June 12, 2019, surveys were performed on a total of 19.77 acres across three sites based on the estimated percentage of habitat determined to be potentially suitable for small	None.

Mongaup River Hydroelectric Projects Fourth Study Progress Report (November 1, 2018 through July 31, 2019)			
No.	**Study**	**Status**	**Modifications to Methodology**
		whorled pogonia during the 2018 survey. • Study results were filed with the Commission on July 31, 2019 and will be provided in the USR to be filed with the Commission by February 9, 2020.	
13	Bald Eagle Management Study	**First Season Study:** • Bald eagle winter and nest surveys were performed between December 2018 and May 2019. • Study results were filed with the Commission on July 31, 2019 and will be provided in the USR to be filed with the Commission by February 9, 2020.	None.
14	Bypass/Base Flow Transect Evaluation Study	**First Season Study:** • Consistent with the approved study plan, the study was completed in 2018 with results provided in the ISR filed with the Commission on February 8, 2019.	None.
15	Alewife Study	**First Season Study:** • Consistent with the approved study plan, the study was completed in 2018 with results provided in the ISR filed with the Commission on February 8, 2019.	None.
16	Wetland Study	**First Season Study:** • Consistent with the approved study plan, the study was completed in 2018 with results provided in the ISR filed with the Commission on February 8, 2019.	None.
17	Fish Passage and Protection Study	**Second Season Study:** • Pursuant to the Commission's SPD issued on June 10, 2019, Eagle Creek will conduct a Fish Passage and Protection Study to evaluate reasonable options to achieve upstream and downstream passage of American eel at all Projects and American shad at the Rio Project. • During development of the study report, Eagle Creek will consult with the USFWS and the New York State Department of Environmental Conservation. • Study results will be provided in the USR to be filed with the Commission by February 9, 2020, or sooner as available.	None.

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Mongaup Falls Hydroelectric Project (FERC No. 10481)
Rio Hydroelectric Project (FERC No. 9690)
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MONGAUP RIVER PROJECTS RELICENSING - Request for Operations Model Run

Originator: American Whitewater
Appalachian Mountain Club, Kayak and Canoe Club of New York

Date Requested: 10/2/2019

Stakeholder: Recreation – Whitewater Paddling

Required: Describe the resource(s) of interest and the anticipated benefit to the resource(s) as a result of this requested scenario.

Whitewater paddling stakeholders request operations model runs for a variety of scenarios related specifically to flows released from the Rio development. The whitewater paddling stakeholders do not have a direct interest in the lake elevations of the Rio or other developments or direct interest regarding the flows provided in any reach other than below the Rio facility.

Whitewater paddling in the Mongaup River watershed has been significantly impacted by the projects. The models proposed by the stakeholders seek to mitigate for the impacts of the projects on our interests and would benefit recreational users.

Whitewater paddlers primarily seek Operations Model Runs that would explore expanding the number of recreation flow days and would expand recreation flows to include the bypassed reach. Related to the bypassed reach, the proposed Operations Model Run are described at the flow level that would be utilized for whitewater paddling as the total flows within the bypassed reach irrespective of the minimum flow requirements. We do not seek to alter the minimum flow requirements.

Recreation Model #1 (increase from 15 to 30 release days – no additional bypass flows)

This model seeks to increase recreation flow days from 15 to 30 by adding recreation flows from the Rio powerhouse to either the Saturday or Sunday of the existing schedule such that every other weekend from April 15 to October 31 will have a recreation flow release on both Saturday and Sunday.

	Dates	Flow (cfs) released from Development	Remarks	Start Hour	End Hour
Current	April 15 to Oct 31; alternating Saturdays and Sundays every other week.	435 (per unit)	Provide a one-unit (435 cfs) or two-unit (870 cfs) release from the Main Powerhouse on alternating weekend days every other weekend between April 15 and October 31.	1100	1500
Alternative	April 15 to Oct 31; every Saturday and Sunday every other week.	435 (per unit)	Provide a one-unit (435 cfs) **and** a two-unit (870 cfs) release from the Main Powerhouse on **both days** of alternating weekend days every other weekend between April 15 and October 31.	1100	1500

Recreation Model #2 (increase from 15 to 30 release days – additional bypass flows on all days)

This model seeks to increase recreation flow days from 15 to 30 by adding recreation flows from the Rio powerhouse to either the Saturday or Sunday of the existing schedule such that every other weekend from April 15 to October 31 will have a recreation flow release on both Saturday and Sunday. This model would also add flows to the bypass reach (up to 280 cfs) from Unit #3 and the Minimum Flow Discharge Valve for all 30 recreation flow days.

	Dates	Flow (cfs) released from Development	Remarks	Start Hour	End Hour
Current	April 15 to Oct 31; alternating Saturdays and Sundays every other week.	435 (per unit)	Provide a one-unit (435 cfs) or two-unit (870 cfs) release from the Main Powerhouse on alternating weekend days every other weekend between April 15 and October 31.	1100	1500
Alternative	April 15 to Oct 31; every Saturday and Sunday every other week	435 (per unit) plus Minimum Flow Discharge Valve and Unit #3	Provide a one-unit (435 cfs) **and** a two-unit (870 cfs) release from the Main Powerhouse on **both days of** alternating weekend days every other weekend between April 15 and October 31, **and add up to 280 cfs of flow in the bypass reach on every recreation flow release** day using Unit #3 and the Minimum Flow Discharge Valve.	1100	1500

Recreation Model #3 (increase from 15 to 30 release days – additional bypass flows on one-unit days only)

This model seeks to increase recreation flow days from 15 to 30 by adding recreation flows from the Rio powerhouse to either the Saturday or Sunday of the existing schedule such that every other weekend from April 15 to October 31 will have a recreation flow release on both Saturday and Sunday. This model would also add flows to the bypass reach from Unit #3 and the Minimum Flow Discharge Valve (up to 280 cfs) for 15 recreation flow days that occur at the 1 Unit level.

	Dates	Flow (cfs) released from Development	Remarks	Start Hour	End Hour
Current	April 15 to Oct 31; alternating Saturdays and Sundays every other week.	435 (per unit)	Provide a one-unit (435 cfs) or two-unit (870 cfs) release from the Main Powerhouse on alternating weekend days every other weekend between April 15 and October 31.	1100	1500
Alternative	April 15 to Oct 31; every Saturday and Sunday every other week	435 (per unit) plus Minimum Flow Discharge Valve and Unit #3	Provide a one-unit (435 cfs) **and** a two-unit (870 cfs) release from the Main Powerhouse on **both days of** alternating weekend days every other weekend between April 15 and October 31, **and add up to 280 cfs in of flow in the bypass reach on days that the recreation flow release is only occurring with one unit**, by using Unit #3 and the Minimum Flow Discharge Valve.	1100	1500

Recreation Model #4 (15 release days – additional bypass flows on all release days)

This model seeks to maintain the existing number and distribution of recreation flow days, with the addition of bypass flows added to all 15 recreation flow days.

	Dates	Flow (cfs) released from Development	Remarks	Start Hour	End Hour
Current	April 15 to Oct 31; alternating Saturdays and Sundays every other week.	435 (per unit)	Provide a one-unit (435 cfs) or two-unit (870 cfs) release from the Main Powerhouse on alternating weekend days every other weekend between April 15 and October 31.	1100	1500
Alternative	April 15 to Oct 31; alternating Saturdays and Sundays every other week.	435 (per unit) plus Minimum Flow Discharge Valve and Unit #3	Provide a one-unit (435 cfs) or two-unit (870 cfs) release from the Main Powerhouse on alternating weekend days every other weekend between April 15 and October 31, **with up to 280 cfs flows in the bypass reach on all 15 days using the Minimum Flow Discharge Valve and Unit #3**	1100	1500

Recreation Model #5 (15 release days – additional bypass flows on one-unit release days only)

This model seeks to maintain the existing number and distribution of recreation flow days, with the addition of bypass flows added to 7 recreation flow days at one unit.

	Dates	Flow (cfs) released from Development	Remarks	Start Hour	End Hour
Current	April 15 to Oct 31; alternating Saturdays and Sundays every other week.	435 (per unit)	Provide a one-unit (435 cfs) or two-unit (870 cfs) release from the Main Powerhouse on alternating weekend days every other weekend between April 15 and October 31.	1100	1500
Alternative	April 15 to Oct 31; alternating Saturdays and Sundays every other week.	435 (per unit) plus Minimum Flow Discharge Valve and Unit #3	Provide a one-unit (435 cfs) or two-unit (870 cfs) release from the Main Powerhouse on alternating weekend days every other weekend between April 15 and October 31, **with up to 280 cfs flows in the bypass reach on 7 days that would have a one-unit release**, using the Minimum Flow Discharge Valve and Unit #3	1100	1500

Recreation Model #6 (increase 15 to 30 release days – 500 cfs total bypass reach flows provided instead of one-unit release)

This model seeks to increase recreation flow days from 15 to 30 by adding recreation flows from the Rio powerhouse to either the Saturday or Sunday of the existing schedule such that every other weekend from April 15 to October 31 will have a recreation flow release on both Saturday and Sunday, as well as replacing recreation flows on the 15 one unit days with a 500 cfs bypass reach flow, such that 15 release days will be provided through bypass reach flows at 500 cfs and 15 release days will be provided at two units.

The stakeholders acknowledge that the project cannot currently release 500 cfs from the existing Minimum Flow Discharge and Unit #3. The stakeholders do not propose that this flow would be provided as spillage, and offer that this flow would be potentially provided through new structures off the of the existing Rio penstock.

	Dates	Flow (cfs) released from Development	Remarks	Start Hour	End Hour
Current	April 15 to Oct 31; alternating Saturdays and Sundays every other week.	435 (per unit)	Provide a one-unit (435 cfs) or two-unit (870 cfs) release from the Main Powerhouse on alternating weekend days every other weekend between April 15 and October 31.	1100	1500
Alternative	April 15 to Oct 31; every Saturday and Sunday every other week	435 (per unit) plus Minimum Flow Discharge Valve and Unit #3 plus new structure	Provide a one-unit (435 cfs) **and** a two-unit (870 cfs) release from the Main Powerhouse on **both days of** alternating weekend days every other weekend between April 15 and October 31, **with 500 cfs flows in the bypass reach on 15 days and two-unit releases on 15 days**, using the Minimum Flow Discharge Valve and Unit #3, and a new structure.	1100	1500

Recreation Model #7 (15 release days – 500 cfs total bypass flows to replace one-unit on all days)

This model seeks to maintain recreation flow days at 15 and to add a 500 cfs bypass reach flow to all 15 releases, with a 500 cfs bypass release to effectively replace one of the Main powerhouse units on each of the 15 recreational flow days. Instead of a one-unit recreational flow release for 7 days, this would become a 500 cfs bypass flow release and the 8 two-unit release days would be replaced with one unit plus a 500 cfs bypass flow release.

The stakeholders acknowledge that the project cannot currently release 500 cfs from the existing Minimum Flow Discharge and Unit #3. The stakeholders do not propose that this flow would be provided as spillage and offer that this flow would be potentially provided through new structures off the of the existing Rio penstock.

	Dates	Flow (cfs) released from Development	Remarks	Start Hour	End Hour
Current	April 15 to Oct 31; alternating Saturdays and Sundays every other week.	435 (per unit)	Provide a one-unit (435 cfs) or two-unit (870 cfs) release from the Main Powerhouse on alternating weekend days every other weekend between April 15 and October 31.	1100	1500

Alternative	April 15 to Oct 31; alternating Saturdays and Sundays every other week	435 (per unit) plus Minimum Flow Discharge Valve and Unit #3 plus new structure	Provide **500cfs bypass reach flows on all 15 releases days and on 8 of those release days, add** a one-unit (435 cfs) release from the Main Powerhouse on alternating weekend days every other weekend between April 15 and October 31, using the Minimum Flow Discharge Valve, Unit #3, and a new structure.	1100	1500

Recreation Model #8 (increase from 15 to 30 release days – 500 cfs total bypass flows to replace all one-unit releases with 15 days at one-unit plus a 500 cfs bypass reach flow and 15 days of just a 500 cfs bypass reach flow)

This model seeks to increase recreation flow days from 15 to 30 by adding recreation flows to either the Saturday or Sunday of the existing schedule such that every other weekend from April 15 to October 31 will have a recreation flow release on both Saturday and Sunday, as well as replacing recreation flows that would have previously come from one of the two generating units with a 500 cfs bypass reach flow. Under this scenario, the project will provide 500 cfs releases to the bypass reach for 15 days and will provide one unit (435 cfs) plus a 500 cfs bypass reach flow for 15 days.

The stakeholders acknowledge that the project cannot currently release 500 cfs from the existing Minimum Flow Discharge and Unit #3. The stakeholders do not propose that this flow would be provided as spillage, and offer that this flow would be potentially provided through new structures off the of the existing Rio penstock.

	Dates	**Flow (cfs) released from Development**	**Remarks**	**Start Hour**	**End Hour**
Current	April 15 to Oct 31; alternating Saturdays and Sundays every other week.	435 (per unit)	Provide a one-unit (435 cfs) or two-unit (870 cfs) release from the Main Powerhouse on alternating weekend days every other weekend between April 15 and October 31.	1100	1500
Alternative	April 15 to Oct 31; every Saturday and Sunday every other week	435 (per unit) plus Minimum Flow Discharge Valve and Unit #3 plus new structure	Provide **500cfs bypass reach flows on all 30 releases days and on 15 of those release days, add** a one-unit (435 cfs) release from the Main Powerhouse on alternating weekend days every other weekend between April 15 and October 31, using the Minimum Flow Discharge Valve, Unit #3, and a new structure	1100	1500

Each scenario run will be compared with both the "Baseline 1" and "Baseline 2" conditions. "Baseline" project operating conditions follow the operating requirements of the existing FERC license as described below.

Baseline 1:
TOR: Pool elevations 1,220 ft to 1,170 ft. Minimum flow below dam of 10 cfs into Black Lake Creek

CLF: Pool elevations 1,071.1 ft to 1,049 ft. Minimum flow below dam of 10 cfs into Black Lake Creek

SWB: Pool elevations 1,070 ft to 1,049 ft. Minimum flow below dam of 100 cfs into Mongaup River.

MON: Pool elevations 935 ft to 927 ft (with pool elevation held within ± 1 foot from May 15 to Jun 30). Minimum flow below dam of 70 cfs into bypassed reach, plus 20 cfs leakage from powerhouse. Ramping rate of 2 units per hour change up and down.

RIO: Pool elevations 815 ft to 807 ft (with pool elevation held within ± 1 foot from May 15 to June 30). Minimum flow below dam of 100 cfs into bypassed reach. Ramping rate of 1 unit per hour at Main Powerhouse change up and down. Recreation flows of a one-unit (435 cfs) or two-unit (870 cfs) release from the Main Powerhouse on alternating weekend days every other weekend between April 15 and October 31.

Baseline 2:
The Difference between the "Baseline 1" and "Baseline 2" scenarios is that in "Baseline 2" the SWB, MON and RIO minimum flows are "or inflow, but no less than 60 cfs".

The maximum hydraulic capacities of the units and discharge valves at each project are as follows:

Development	Structure	Hydraulic Capacity (cfs)	Discharge Location
Toronto	Discharge Tunnel	620[1]	Into Black Lake Creek at dam
Cliff Lake	Discharge Tunnel	430[1]	Into Black Lake Creek at dam
Swinging Bridge	Unit 2	1,015	Into Mongaup River at toe of non-overflow dam
	Unit 3 (under construction)	60 – 125	
	Minimum Flow Discharge Valve	up to 150[1]	
Mongaup Falls	Units 1, 2, 3, 4	155 (each)	Into Mongaup River at powerhouse
	Minimum Flow Discharge Valve	up to 475[2]	Into bypassed reach at dam
Rio	Units 1, 2	435 (each)	Into lower Mongaup River at Main Powerhouse
	Unit 3	60 - 120	Into bypassed reach at dam
	Minimum Flow Discharge Valve	up to 160[1]	Into bypassed reach just downstream of dam

[1]The listed maximum flow is contingent upon maximum head conditions (i.e., full pool). If full pool conditions are not available, the maximum flow will be reduced.

[2]A maximum flow of 475 cfs from the minimum flow valve is considered a theoretical maximum (i.e., has not been field tested) and may not be achievable due to structural concerns. Further engineering analysis would be necessary to confirm this flow. A flow of 70 cfs is normally provided by the minimum flow valve.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
3817 Luker Road
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October 3, 2019

Mr. Michael Scarzello
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RE: Rio Hydroelectric Project (FERC No. P-9690-112)
Mongaup Falls Hydroelectric Project (FERC No. P-10481-067)
Swinging Bridge Hydroelectric Project (FERC No. P-10482-117)
Operation Model Scenario Recommendations

Dear Mr. Scarzello:

The U.S. Fish and Wildlife Service (Service) is providing our recommendations for scenarios for the Operations Model developed pursuant to the February 2, 2018, Study Plan Determination by the Federal Energy Regulatory Commission (Commission) and as requested by Eagle Creek Hydro (Applicant) in their September 12, 2019, electronic correspondence for the Rio (FERC No. 9690-112), Mongaup Falls (FERC No. 10481-067), and Swinging Bridge (FERC No. 10482-117) Hydroelectric Projects. The three projects, collectively known as the Mongaup River Hydroelectric Projects (Projects), are located on the Mongaup River in Sullivan and Orange Counties, New York.

The Service views this study as having the primary goal of evaluating water budgets for requests by the various stakeholders involved in the relicensing proceeding. We are requesting several scenarios to be evaluated; however, the goal of this study is to evaluate the ability of the Projects to maintain compliance with a range of potential recommendations and to determine what costs may be associated with these requirements. The Service will base our final recommendations and prescriptions at the Projects on the best-available information and the needs of the resources under our jurisdiction at the Projects.

Minimum Flows

The February 8, 2019, Initial Study Report (ISR) provided water quality data from 2018 that indicates that minimum flow releases provided at the Projects are often inadequate to protect the cold water conditions necessary for the survival of trout species managed by the New York State Department of Environmental Conservation (NYSDEC) in the Mongaup River. Specific comments related to our concerns with the water quality data measured in 2018 can be found in

our April 10, 2019, comments on the ISR. Increasing the minimum flows from the Projects would provide additional cold water inputs into the river to limit temperature increases beyond the tolerances of these fish species.

The Service recommends that the Applicant include, as separate scenarios, evaluations of minimum flows of 125 cubic feet per second (cfs) (Scenario 1), 150 cfs (Scenario 2), and 175 cfs (Scenario 3) as downstream flows below the Swinging Bridge, Mongaup, and Rio minimum flow powerhouses. During the 2018 study period, only the reach below Rio, with minimum flows ranging from 150 to 180 cfs, had water temperatures that would support trout. The flows suggested above will allow for an evaluation of water budgeting across an even interval from the currently-required 100 cfs minimum flows (90 cfs at Mongaup Falls), and a range of potentially suitable flows observed in 2018.

The Service recommends that the Applicant also evaluate minimum flows of 25 cfs (Scenario 4), 50 cfs (Scenario 5), and 100 cfs (Scenario 6) in Black Lake Creek below Toronto and Cliff Lake dams. During the 2018 study period, the 10 cfs minimum flow in Black Lake Creek resulted in high water temperatures downstream that are not compatible with trout survival; however, when flows of up to 120 cfs were provided, temperatures were adequate for trout survival. The flows requested above will allow for an evaluation of water budgeting across an even interval from the currently required 10 cfs minimum flows, and a range of potentially suitable flows observed in 2018.

Recreational Flows

The current operation of the Projects and the baseline scenarios in the Operations Model assume an order of precedence such that recreational flows for whitewater boating are always released, regardless of inflows and the ability to provide the 100 cfs minimum flows (90 cfs at Mongaup Falls) in the Mongaup River. The Applicant routinely requests that the NYSDEC allow for a reduction in required minimum flows, while at the same time providing recreational releases. The reductions in minimum flows can raise water temperatures and decrease available habitat for aquatic species in the Mongaup River.

The Service recommends that the Applicant include a scenario in which recreational releases are suspended during drought conditions (Scenario 7) to determine what impact these releases may have on the ability to provide minimum flows and maintain reservoir levels in low water years. This scenario should estimate how frequently this may occur. The Applicant should build this scenario with a specific drought condition threshold that is dependent on cumulative system inflows over the water year (i.e., cumulative inflows are less than 25% of historically recorded inflows) and not dependent on the prior operation of the Projects.

Fish Passage Flows

The Applicant is currently conducting a Fish Passage and Protection study as a component of the studies requested by the Service and required by the Commission. The Service has directed the Applicant to consult our Regional Fish Passage Engineering Design Criteria. This document has

been updated for 2019.[1] Please utilize our most recent guidance in completing this study. Restoring upstream and downstream passage for migratory fish species, including American eel (*Anguilla rostrata*) and American shad (*Alosa sapidissima*), will return these species to their historically available habitats.

The Service recommends that the Applicant include a scenario where suitable upstream and downstream flows are provided at each of the Projects' dams for American eel and for American shad (Rio Project only) (Scenario 8). Upstream or downstream fish passage facilities will require flows that will not be available for generation but can be utilized to meet downstream minimum flow requirements. These flows should be based on the outcome of the Fish Passage and Protection study in consultation with the Service's Fish Passage Engineers and the NYSDEC.

*****

We appreciate the opportunity to provide our recommendations for scenarios to be considered in the Operations Model for the Projects. If you have any questions or desire additional information, please contact John Wiley at john_wiley@fws.gov or 607-753-9334.

Sincerely,

Anne d. Secord

for David A. Stilwell
Field Supervisor

cc: TU, Plattsburg, NY (W. Wellman)
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[1] https://www.fws.gov/northeast/fisheries/pdf/USFWS-R5-2019-Fish-Passage-Engineering-Design-Criteria-190622.pdf

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FRANCES E. FRANCIS
MARGARET A. McGOLDRICK

October 4, 2019

Via eFiling

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

Re: *Eagle Creek Hydro Power, LLC, Eagle Creek Water Resources, LLC, and Eagle Creek Land Resources, LLC*, Project Nos. 9690-112, 10481-067, and 10482-117
Proposed Reservoir Operations Model Scenarios

Dear Secretary Bose:

Pursuant to the June 10, 2019 Determination on Requests for Study Modifications issued by the Director of the Office of Energy Projects in the above-captioned projects[1] and a September 12, 2019 email from the licensees' consultant, HDR Inc., to a group of stakeholders, Homeowners on Toronto ("HOOT") and the Swinging Bridge Property Owners Association ("SBPOA") request that Eagle Creek run its Reservoir Operations Model for the alternative operational scenarios detailed on the forms attached hereto. The scenarios consist of the following:

Scenario 1: Winter minimums of 1205/1052 at Toronto and Swinging Bridge, respectively, rising to 1210/1057 for April/May, with summer minimums of 1218/1064, and a maximum elevation at Swinging Bridge of 1068. Memorial Day elevation minimums are 1220/1065. October levels of 1214/1062 are through the 15th of the month only, followed by reversion to the winter minimums. Minimum flows are current Baseline 2 (i.e. can be reduced to 60 cfs below Swinging Bridge under some circumstances).

Scenario 2: Differs from Scenario 1 in that the maximum elevation at Swinging Bridge reverts to the higher baseline value of 1070.

Scenario 3: Differs from Scenario 1 in that summer minimums are reduced to 1216/1063.

[1] eLibrary no. 20190610-3004, at B-3.

Scenario 4: Differs from Scenario 1 in that no winter minimums are specified.

Scenario 5: Differs from Scenario 1 in that non-winter minimum elevations are specified to never fall below Delaware River Basin Commission emergency drought storage.

Scenario 6: Differs from Scenario 1 in that April/May minimums are kept to winter values of 1205/1052.

Sincerely,

/s/ *Rebecca J. Baldwin*

Rebecca J. Baldwin

Attorney for HOOT

Spiegel & McDiarmid LLP
1875 Eye Street, NW, Suite 700
Washington, DC 20006

/s/ *Steven Wilson*

Steven Wilson

Attorney for
Swinging Bridge Property Owners Association

Young / Sommer LLC
Executive Woods, Five Palisades Drive
Albany, NY 12205

cc: Michael Scarzello (Eagle Creek)
Jim Gibson (HDR)
service list

SCENARIO 1

MONGAUP RIVER PROJECTS RELICENSING - Request for Operations Model Run

Originator:	Rebecca Baldwin (counsel for HOOT) Steven Wilson (counsel for SBPOA)	**Date Requested:**	Oct. 4, 2019
Stakeholder:	Homeowners On Toronto (HOOT) Swinging Bridge Property Owners Association (SBPOA)	Please direct technical questions to Jim Booker, jbooker@siena.edu	

Required: Describe the resource(s) of interest and the anticipated benefit to the resource(s) as a result of this requested scenario.

A. Benefits reservoir recreation (public, marina, property owners) during recreation season Memorial Day through end of September. Maximum level below full pool keeps Swinging Bridge beaches exposed.

B. Benefits marinas and property owners through improved boat and dock removal for two weekends during October. (Note: drawdown of reservoirs can be sequential.)

C. Year round aesthetic and shoreline benefits to public recreation and property owners with higher water levels and less exposed shoreline.

Each scenario run will be compared with both the "Baseline 1" and "Baseline 2" conditions. "Baseline" project operating conditions follow the operating requirements of the existing FERC license as described below.

Baseline 1:
TOR: Pool elevations 1,220 ft to 1,170 ft. Minimum flow below dam of 10 cfs into Black Lake Creek

CLF: Pool elevations 1,071.1 ft to 1,049 ft. Minimum flow below dam of 10 cfs into Black Lake Creek

SWB: Pool elevations 1,070 ft to 1,049 ft. Minimum flow below dam of 100 cfs into Mongaup River.

MON: Pool elevations 935 ft to 927 ft (with pool elevation held within ± 1 foot from May 15 to Jun 30). Minimum flow below dam of 70 cfs into bypassed reach, plus 20 cfs leakage from powerhouse. Ramping rate of 2 units per hour change up and down.

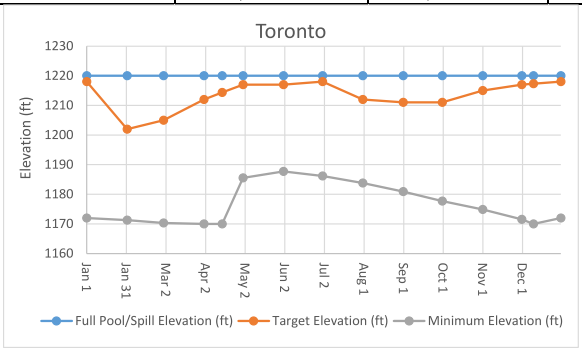
RIO: Pool elevations 815 ft to 807 ft (with pool elevation held within ± 1 foot from May 15 to June 30). Minimum flow below dam of 100 cfs into bypassed reach. Ramping rate of 1 unit per hour at Main Powerhouse change up and down. Recreation flows of a one-unit (435 cfs) or two-unit (870 cfs) release from the Main Powerhouse on alternating weekend days every other weekend between April 15 and October 31.

Baseline 2:
The Difference between the "Baseline 1" and "Baseline 2" scenarios is that in "Baseline 2" the SWB, MON and RIO minimum flows are "or inflow, but no less than 60 cfs".

Toronto

Pool Elevations – Spill, Target, Minimum (All elevations are NGVD 29 unless otherwise specified)

	Baseline			Alternative	
Date	Maximum/Full Pool Elevation (ft)	Minimum Elevation (ft)	Baseline Model Elevation (ft)	Maximum/Full Pool Elevation (ft)	Minimum Elevation (ft)
January 1	1,220.00	1,172.00	1,218.00		1205
February 1	1,220.00	1,171.30	1,202.00		1205
March 1	1,220.00	1,170.30	1,205.00		1205
April 1	1,220.00	1,170.00	1,212.00		1210
April 15	1,220.00	1,170.00	1,214.33		1210
May 1	1,220.00	1,185.50	1,217.00		1210
June 1	1,220.00	1,187.70	1,217.00		1220/ 1218
July 1	1,220.00	1,186.20	1,218.00		1218
August 1	1,220.00	1,183.80	1,212.00		1218
September 1	1,220.00	1,180.90	1,211.00		1218
October 1	1,220.00	1,177.70	1,211.00		1214/1205
November 1	1,220.00	1,174.90	1,215.00		1205
December 1	1,220.00	1,171.50	1,217.00		1205
December 10	1,220.00	1,170.00	1,217.30		1205
December 31	1,220.00	1,172.00	1,218.00		1205



Minimum Flows

Current: 10 cfs from dam into Black Lake Creek

Alternative: _____

Lake Level Stabilization

Current: None

Alternative: see below

Other

The HOOT and SBPOA preferred scenario for recreation season (Memorial Day to Sept. 30) is an average elevation of 1218 feet for Toronto and 1064 feet for Swinging Bridge. Memorial Day-only minimum is 1220 at Toronto and 1065 at Swinging Bridge.

Acceptable deviations from the mean are +/- 2 feet for Toronto and +1 foot/-2 feet for Swinging Bridge.

The minimum elevation schedule presented here is meant to approximate this outcome under CHEOPS logic.

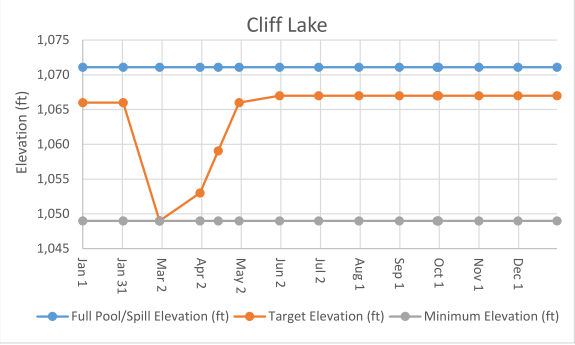
If a "look back" function is available to update daily minimums within model runs and thus achieve the two averages, this would be an alternative way to model this scenario.

October minimum elevation through Oct. 15 is 1214 at Toronto and 1062 at Swinging Bridge, for boat removal; post-Oct. 15 min is 1205 at Toronto and 1052 at Swinging Bridge.

Cliff Lake

Pool Elevations – Spill, Target, Minimum (All elevations are NGVD 29 unless otherwise specified)

	Baseline			Alternative	
Date	Maximum/Full Pool Elevation (ft)	Minimum Elevation (ft)	Baseline Model Elevation (ft)	Maximum/Full Pool Elevation (ft)	Minimum Elevation (ft)
January 1	1,071.10	1,049.00	1,066.00		
February 1	1,071.10	1,049.00	1,066.00		
March 1	1,071.10	1,049.00	1,049.00		
April 1	1,071.10	1,049.00	1,053.00		
April 15	1,071.10	1,049.00	1,059.07		
May 1	1,071.10	1,049.00	1,066.00		
June 1	1,071.10	1,049.00	1,067.00		
July 1	1,071.10	1,049.00	1,066.00		
August 1	1,071.10	1,049.00	1,062.00		
September 1	1,071.10	1,049.00	1,061.50		
September 30	1,071.10	1,049.00	1,061.02		
October 1	1,071.10	1,049.00	1,061.00		
November 1	1,071.10	1,049.00	1,066.00		
December 1	1,071.10	1,049.00	1,066.00		
December 31	1,071.10	1,049.00	1,066.00		



Minimum Flows

Current: 10 cfs from dam into Black Lake Creek

Alternative: _____

Lake Level Stabilization

Current: None

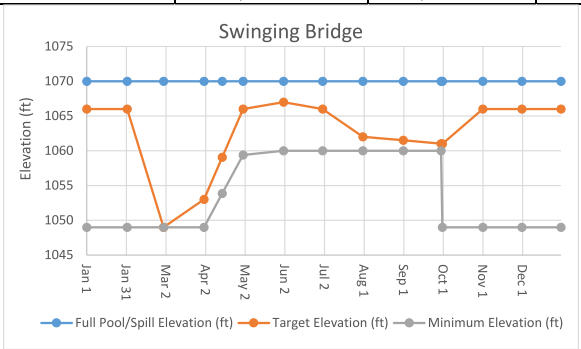
Alternative: _____

Other

Swinging Bridge

Pool Elevations – Spill, Target, Minimum (All elevations are NGVD 29 unless otherwise specified)

	Baseline				Alternative		
Date	Maximum/Full Pool Elevation (ft)	Minimum Elevation (ft)	Recreation Guideline Elevation (ft)	Baseline Model Elevation (ft)	Maximum/Full Pool Elevation (ft)	Minimum Elevation (ft)	Recreation Guideline Elevation (ft)
January 1	1,070.00	1,049.00		1,066.00	1068	1052	
February 1	1,070.00	1,049.00		1,066.00	1068	1052	
March 1	1,070.00	1,049.00		1,049.00	1068	1052	
April 1	1,070.00	1,049.00		1,053.00	1068	1057	
April 15	1,070.00	1,053.85		1,059.07	1068	1057	
May 1	1,070.00	1,059.40		1,066.00	1068	1057	
June 1	1,070.00	1,060.00	1063.00	1,067.00	1068	1065/1064	
July 1	1,070.00	1,060.00	1062.50	1,066.00	1068	1064	
August 1	1,070.00	1,060.00	1062.00	1,062.00	1068	1064	
September 1	1,070.00	1,060.00	1061.50	1,061.50	1068	1064	
September 30	1,070.00	1,060.00	1061.00	1,061.02	1068	1064	
October 1	1,070.00	1,049.00		1,061.00	1068	1062/1052	
November 1	1,070.00	1,049.00		1,066.00	1068	1052	
December 1	1,070.00	1,049.00		1,066.00	1068	1052	
December 31	1,070.00	1,049.00		1,066.00	1068	1052	



Minimum Flows

Current: 100 cfs (Baseline 1) or inflow (NLT 60 cfs) (Baseline 2) below dam into Mongaup River

Alternative: Baseline 2 minimum flow

Lake Level Stabilization

Current: None

Alternative: see below

Other

The HOOT and SBPOA preferred scenario for recreation season (Memorial Day to Sept. 30) is an average elevation of 1218 feet for Toronto and 1064 feet for Swinging Bridge. Memorial Day-only minimum is 1220 at Toronto and 1065 at Swinging Bridge.

Acceptable deviations from the mean are +/- 2 feet for Toronto and +1 foot/-2 feet for Swinging Bridge.

The minimum elevation schedule presented here is meant to approximate this outcome under CHEOPS logic.

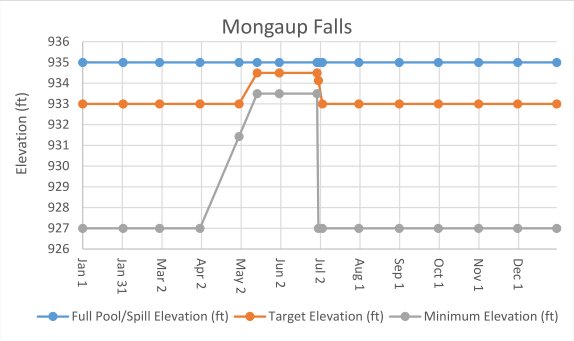
If a "look back" function is available to update daily minimums within model runs and thus achieve the two averages this would be an alternative way to model this scenario.

October minimum elevation through Oct. 15 is 1214 at Toronto and 1062 at Swinging Bridge, for boat removal; post-Oct. 15 min is 1205 at Toronto and 1052 at Swinging Bridge.

Mongaup Falls

Pool Elevations – Spill, Target, Minimum (All elevations are NGVD 29 unless otherwise specified)

	Baseline			Alternative	
Date	Maximum/Full Pool Elevation (ft)	Minimum Elevation (ft)	Baseline Model Elevation (ft)	Maximum/Full Pool Elevation (ft)	Minimum Elevation (ft)
January 1	935.00	927.00	933.00		
February 1	935.00	927.00	933.00		
March 1	935.00	927.00	933.00		
April 1	935.00	927.00	933.00		
May 1	935.00	931.43	933.00		
May 15	935.00	933.50	934.50		
June 1	935.00	933.50	934.50		
June 30	935.00	933.50	934.50		
July 1	935.00	927.00	934.13		
July 4	935.00	927.00	933.00		
August 1	935.00	927.00	933.00		
September 1	935.00	927.00	933.00		
October 1	935.00	927.00	933.00		
November 1	935.00	927.00	933.00		
December 1	935.00	927.00	933.00		
December 31	935.00	927.00	933.00		



Minimum Flows

Current: 70 cfs (Baseline 1) or inflow (NLT 60 cfs) (Baseline 2) into bypassed reach plus 20 cfs leakage though powerhouse into Mongaup River

Alternative: _____

Lake Level Stabilization

Current: Hold pool elevation within ±1 foot of starting elevation from May 15 to June 30

Alternative: _____

Ramping Rate

Current: 2 units/hour up/down

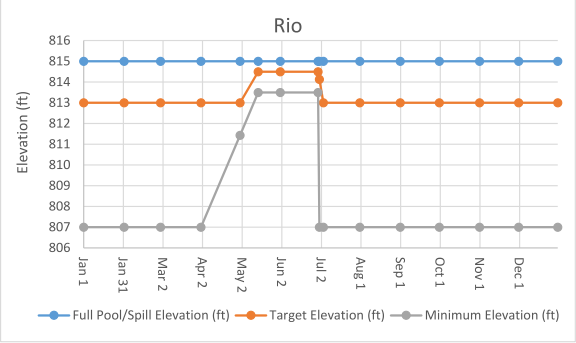
Alternative: _____

Other

Rio

Pool Elevations – Spill, Target, Minimum (All elevations are NGVD 29 unless otherwise specified)

	Baseline			Alternative	
Date	Maximum/Full Pool Elevation (ft)	Minimum Elevation (ft)	Baseline Model Elevation (ft)	Maximum/Full Pool Elevation (ft)	Minimum Elevation (ft)
January 1	815.00	807.00	813.00		
February 1	815.00	807.00	813.00		
March 1	815.00	807.00	813.00		
April 1	815.00	807.00	813.00		
May 1	815.00	811.43	813.00		
May 15	815.00	813.50	814.50		
June 1	815.00	813.50	814.50		
June 30	815.00	813.50	814.50		
July 1	815.00	807.00	814.13		
July 4	815.00	807.00	813.00		
August 1	815.00	807.00	813.00		
September 1	815.00	807.00	813.00		
October 1	815.00	807.00	813.00		
November 1	815.00	807.00	813.00		
December 1	815.00	807.00	813.00		
December 31	815.00	807.00	813.00		



Recreation Flows

	Dates	Flow (cfs) released from Development	Remarks	Start Hour	End Hour
Current	April 15 to Oct 31; alternating Saturdays and Sundays every other week.	435 (per unit)	Provide a one-unit (435 cfs) or two-unit (870 cfs) release from the Main Powerhouse on alternating weekend days every other weekend between April 15 and October 31.	1100	1500
Alternative					

Rio (cont.)

Minimum Flows

Current: 100 cfs (Baseline 1) or inflow (NLT 60 cfs) (Baseline 2) into bypassed reach

Alternative: _____

Lake Level Stabilization

Current: Hold pool elevation within ±1 foot of starting elevation from May 15 to June 30

Alternative: _____

Ramping Rate

Current: 1 unit/hour up/down (Main Powerhouse)

Alternative: _____

Other

The maximum hydraulic capacities of the units and discharge valves at each project are as follows:

Development	Structure	Hydraulic Capacity (cfs)	Discharge Location
Toronto	Discharge Tunnel	620[1]	Into Black Lake Creek at dam
Cliff Lake	Discharge Tunnel	430[1]	Into Black Lake Creek at dam
Swinging Bridge	Unit 2	1,015	Into Mongaup River at toe of non-overflow dam
	Unit 3 (under construction)	60 – 125	
	Minimum Flow Discharge Valve	up to 150[1]	
Mongaup Falls	Units 1, 2, 3, 4	155 (each)	Into Mongaup River at powerhouse
	Minimum Flow Discharge Valve	up to 475[2]	Into bypassed reach at dam
Rio	Units 1, 2	435 (each)	Into lower Mongaup River at Main Powerhouse
	Unit 3	60 - 120	Into bypassed reach at dam
	Minimum Flow Discharge Valve	up to 160[1]	Into bypassed reach just downstream of dam

[1]The listed maximum flow is contingent upon maximum head conditions (i.e., full pool). If full pool conditions are not available, the maximum flow will be reduced.
[2]A maximum flow of 475 cfs from the minimum flow valve is considered a theoretical maximum (i.e., has not been field tested) and may not be achievable due to structural concerns. Further engineering analysis would be necessary to confirm this flow. A flow of 70 cfs is normally provided by the minimum flow valve.

SCENARIO 2

MONGAUP RIVER PROJECTS RELICENSING - Request for Operations Model Run

Originator:	Rebecca Baldwin (counsel for HOOT) Steven Wilson (counsel for SBPOA)	**Date Requested:**	Oct. 4, 2019
Stakeholder:	Homeowners On Toronto (HOOT) Swinging Bridge Property Owners Association (SBPOA)	Please direct technical questions to Jim Booker, jbooker@siena.edu	

Required: Describe the resource(s) of interest and the anticipated benefit to the resource(s) as a result of this requested scenario.

A. Benefits reservoir recreation (public, marina, property owners) during recreation season Memorial Day through end of September.

B. Benefits marinas and property owners through improved boat and dock removal for two weekends during October. (Note: drawdown of reservoirs can be sequential.)

C. Year round aesthetic and shoreline benefits to public recreation and property owners with higher water levels and less exposed shoreline.

D. Benefits power operations compared to Scenario 1 through additional storage at Swinging Bridge Reservoir between 1,068 and 1,070 feet.

Each scenario run will be compared with both the "Baseline 1" and "Baseline 2" conditions. "Baseline" project operating conditions follow the operating requirements of the existing FERC license as described below.

Baseline 1:
TOR: Pool elevations 1,220 ft to 1,170 ft. Minimum flow below dam of 10 cfs into Black Lake Creek

CLF: Pool elevations 1,071.1 ft to 1,049 ft. Minimum flow below dam of 10 cfs into Black Lake Creek

SWB: Pool elevations 1,070 ft to 1,049 ft. Minimum flow below dam of 100 cfs into Mongaup River.

MON: Pool elevations 935 ft to 927 ft (with pool elevation held within ± 1 foot from May 15 to Jun 30). Minimum flow below dam of 70 cfs into bypassed reach, plus 20 cfs leakage from powerhouse. Ramping rate of 2 units per hour change up and down.

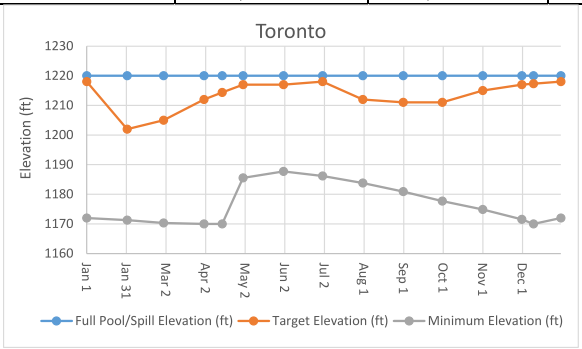
RIO: Pool elevations 815 ft to 807 ft (with pool elevation held within ± 1 foot from May 15 to June 30). Minimum flow below dam of 100 cfs into bypassed reach. Ramping rate of 1 unit per hour at Main Powerhouse change up and down. Recreation flows of a one-unit (435 cfs) or two-unit (870 cfs) release from the Main Powerhouse on alternating weekend days every other weekend between April 15 and October 31.

Baseline 2:
The Difference between the "Baseline 1" and "Baseline 2" scenarios is that in "Baseline 2" the SWB, MON and RIO minimum flows are "or inflow, but no less than 60 cfs".

Toronto

Pool Elevations – Spill, Target, Minimum (All elevations are NGVD 29 unless otherwise specified)

	Baseline			Alternative	
Date	Maximum/Full Pool Elevation (ft)	Minimum Elevation (ft)	Baseline Model Elevation (ft)	Maximum/Full Pool Elevation (ft)	Minimum Elevation (ft)
January 1	1,220.00	1,172.00	1,218.00		1205
February 1	1,220.00	1,171.30	1,202.00		1205
March 1	1,220.00	1,170.30	1,205.00		1205
April 1	1,220.00	1,170.00	1,212.00		1210
April 15	1,220.00	1,170.00	1,214.33		1210
May 1	1,220.00	1,185.50	1,217.00		1210
June 1	1,220.00	1,187.70	1,217.00		1220/ 1218
July 1	1,220.00	1,186.20	1,218.00		1218
August 1	1,220.00	1,183.80	1,212.00		1218
September 1	1,220.00	1,180.90	1,211.00		1218
October 1	1,220.00	1,177.70	1,211.00		1214/1205
November 1	1,220.00	1,174.90	1,215.00		1205
December 1	1,220.00	1,171.50	1,217.00		1205
December 10	1,220.00	1,170.00	1,217.30		1205
December 31	1,220.00	1,172.00	1,218.00		1205



Minimum Flows

Current: 10 cfs from dam into Black Lake Creek

Alternative: _____

Lake Level Stabilization

Current: None

Alternative: see below

Other

The HOOT and SBPOA preferred scenario for recreation season (Memorial Day to Sept. 30) is an average elevation of 1218 feet for Toronto and 1064 feet for Swinging Bridge. Memorial Day-only minimum is 1220 at Toronto and 1065 at Swinging Bridge.

Acceptable deviations from the mean are +/- 2 feet for Toronto and +1 foot/-2 feet for Swinging Bridge.

The minimum elevation schedule presented here is meant to approximate this outcome under CHEOPS logic.

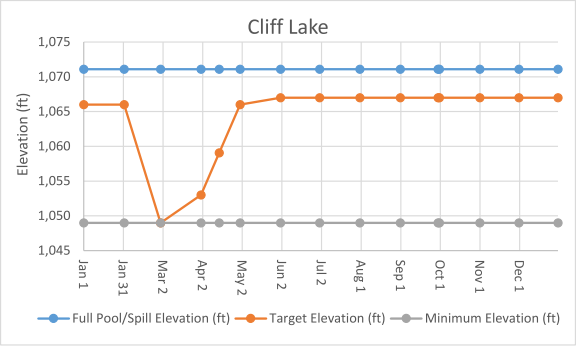
If a "look back" function is available to update daily minimums within model runs and thus achieve the two averages, this would be an alternative way to model this scenario.

October minimum elevation through Oct. 15 is 1214 at Toronto and 1062 at Swinging Bridge, for boat removal; post-Oct. 15 min is 1205 at Toronto and 1052 at Swinging Bridge.

Cliff Lake

Pool Elevations – Spill, Target, Minimum (All elevations are NGVD 29 unless otherwise specified)

	Baseline			Alternative	
Date	Maximum/Full Pool Elevation (ft)	Minimum Elevation (ft)	Baseline Model Elevation (ft)	Maximum/Full Pool Elevation (ft)	Minimum Elevation (ft)
January 1	1,071.10	1,049.00	1,066.00		
February 1	1,071.10	1,049.00	1,066.00		
March 1	1,071.10	1,049.00	1,049.00		
April 1	1,071.10	1,049.00	1,053.00		
April 15	1,071.10	1,049.00	1,059.07		
May 1	1,071.10	1,049.00	1,066.00		
June 1	1,071.10	1,049.00	1,067.00		
July 1	1,071.10	1,049.00	1,066.00		
August 1	1,071.10	1,049.00	1,062.00		
September 1	1,071.10	1,049.00	1,061.50		
September 30	1,071.10	1,049.00	1,061.02		
October 1	1,071.10	1,049.00	1,061.00		
November 1	1,071.10	1,049.00	1,066.00		
December 1	1,071.10	1,049.00	1,066.00		
December 31	1,071.10	1,049.00	1,066.00		



Minimum Flows

Current: 10 cfs from dam into Black Lake Creek

Alternative: _____

Lake Level Stabilization

Current: None

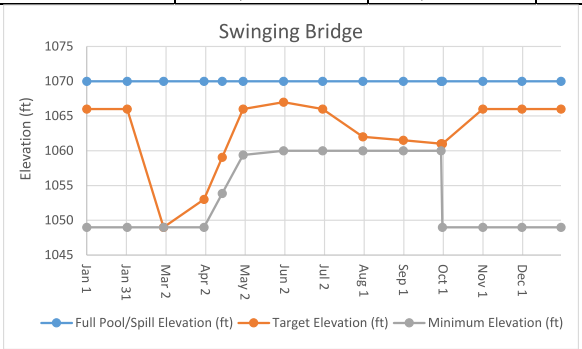
Alternative: _____

Other

Swinging Bridge

Pool Elevations – Spill, Target, Minimum (All elevations are NGVD 29 unless otherwise specified)

	Baseline				Alternative		
Date	Maximum/Full Pool Elevation (ft)	Minimum Elevation (ft)	Recreation Guideline Elevation (ft)	Baseline Model Elevation (ft)	Maximum/Full Pool Elevation (ft)	Minimum Elevation (ft)	Recreation Guideline Elevation (ft)
January 1	1,070.00	1,049.00		1,066.00		1052	
February 1	1,070.00	1,049.00		1,066.00		1052	
March 1	1,070.00	1,049.00		1,049.00		1052	
April 1	1,070.00	1,049.00		1,053.00		1057	
April 15	1,070.00	1,053.85		1,059.07		1057	
May 1	1,070.00	1,059.40		1,066.00		1057	
June 1	1,070.00	1,060.00	1063.00	1,067.00		1065/1064	
July 1	1,070.00	1,060.00	1062.50	1,066.00		1064	
August 1	1,070.00	1,060.00	1062.00	1,062.00		1064	
September 1	1,070.00	1,060.00	1061.50	1,061.50		1064	
September 30	1,070.00	1,060.00	1061.00	1,061.02		1064	
October 1	1,070.00	1,049.00		1,061.00		1062/1052	
November 1	1,070.00	1,049.00		1,066.00		1052	
December 1	1,070.00	1,049.00		1,066.00		1052	
December 31	1,070.00	1,049.00		1,066.00		1052	



Minimum Flows

Current: 100 cfs (Baseline 1) or inflow (NLT 60 cfs) (Baseline 2) below dam into Mongaup River

Alternative: Baseline 2 minimum flow

Lake Level Stabilization

Current: None

Alternative: see below

Other

The HOOT and SBPOA preferred scenario for recreation season (Memorial Day to Sept. 30) is an average elevation of 1218 feet for Toronto and 1064 feet for Swinging Bridge. Memorial Day-only minimum is 1220 at Toronto and 1065 at Swinging Bridge.

Acceptable deviations from the mean are +/- 2 feet for Toronto and +1 foot/-2 feet for Swinging Bridge.

The minimum elevation schedule presented here is meant to approximate this outcome under CHEOPS logic.

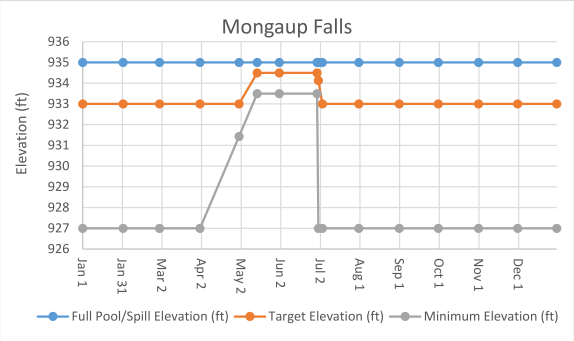
If a "look back" function is available to update daily minimums within model runs and thus achieve the two averages this would be an alternative way to model this scenario.

October minimum elevation through Oct. 15 is 1214 at Toronto and 1062 at Swinging Bridge, for boat removal; post-Oct. 15 min is 1205 at Toronto and 1052 at Swinging Bridge.

Mongaup Falls

Pool Elevations – Spill, Target, Minimum (All elevations are NGVD 29 unless otherwise specified)

	Baseline			Alternative	
Date	Maximum/Full Pool Elevation (ft)	Minimum Elevation (ft)	Baseline Model Elevation (ft)	Maximum/Full Pool Elevation (ft)	Minimum Elevation (ft)
January 1	935.00	927.00	933.00		
February 1	935.00	927.00	933.00		
March 1	935.00	927.00	933.00		
April 1	935.00	927.00	933.00		
May 1	935.00	931.43	933.00		
May 15	935.00	933.50	934.50		
June 1	935.00	933.50	934.50		
June 30	935.00	933.50	934.50		
July 1	935.00	927.00	934.13		
July 4	935.00	927.00	933.00		
August 1	935.00	927.00	933.00		
September 1	935.00	927.00	933.00		
October 1	935.00	927.00	933.00		
November 1	935.00	927.00	933.00		
December 1	935.00	927.00	933.00		
December 31	935.00	927.00	933.00		



Minimum Flows

Current: 70 cfs (Baseline 1) or inflow (NLT 60 cfs) (Baseline 2) into bypassed reach plus 20 cfs leakage though powerhouse into Mongaup River

Alternative: _____

Lake Level Stabilization

Current: Hold pool elevation within ±1 foot of starting elevation from May 15 to June 30

Alternative: _____

Ramping Rate

Current: 2 units/hour up/down

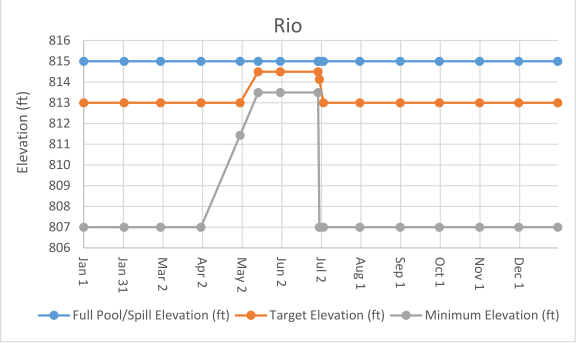
Alternative: _____

Other

Rio

Pool Elevations – Spill, Target, Minimum (All elevations are NGVD 29 unless otherwise specified)

	Baseline			Alternative	
Date	Maximum/Full Pool Elevation (ft)	Minimum Elevation (ft)	Baseline Model Elevation (ft)	Maximum/Full Pool Elevation (ft)	Minimum Elevation (ft)
January 1	815.00	807.00	813.00		
February 1	815.00	807.00	813.00		
March 1	815.00	807.00	813.00		
April 1	815.00	807.00	813.00		
May 1	815.00	811.43	813.00		
May 15	815.00	813.50	814.50		
June 1	815.00	813.50	814.50		
June 30	815.00	813.50	814.50		
July 1	815.00	807.00	814.13		
July 4	815.00	807.00	813.00		
August 1	815.00	807.00	813.00		
September 1	815.00	807.00	813.00		
October 1	815.00	807.00	813.00		
November 1	815.00	807.00	813.00		
December 1	815.00	807.00	813.00		
December 31	815.00	807.00	813.00		



Recreation Flows

	Dates	Flow (cfs) released from Development	Remarks	Start Hour	End Hour
Current	April 15 to Oct 31; alternating Saturdays and Sundays every other week.	435 (per unit)	Provide a one-unit (435 cfs) or two-unit (870 cfs) release from the Main Powerhouse on alternating weekend days every other weekend between April 15 and October 31.	1100	1500
Alternative					

Rio (cont.)

Minimum Flows

Current: 100 cfs (Baseline 1) or inflow (NLT 60 cfs) (Baseline 2) into bypassed reach

Alternative: _____

Lake Level Stabilization

Current: Hold pool elevation within ±1 foot of starting elevation from May 15 to June 30

Alternative: _____

Ramping Rate

Current: 1 unit/hour up/down (Main Powerhouse)

Alternative: _____

Other

The maximum hydraulic capacities of the units and discharge valves at each project are as follows:

Development	Structure	Hydraulic Capacity (cfs)	Discharge Location
Toronto	Discharge Tunnel	620[1]	Into Black Lake Creek at dam
Cliff Lake	Discharge Tunnel	430[1]	Into Black Lake Creek at dam
Swinging Bridge	Unit 2	1,015	Into Mongaup River at toe of non-overflow dam
	Unit 3 (under construction)	60 – 125	
	Minimum Flow Discharge Valve	up to 150[1]	
Mongaup Falls	Units 1, 2, 3, 4	155 (each)	Into Mongaup River at powerhouse
	Minimum Flow Discharge Valve	up to 475[2]	Into bypassed reach at dam
Rio	Units 1, 2	435 (each)	Into lower Mongaup River at Main Powerhouse
	Unit 3	60 - 120	Into bypassed reach at dam
	Minimum Flow Discharge Valve	up to 160[1]	Into bypassed reach just downstream of dam

[1]The listed maximum flow is contingent upon maximum head conditions (i.e., full pool). If full pool conditions are not available, the maximum flow will be reduced.
[2]A maximum flow of 475 cfs from the minimum flow valve is considered a theoretical maximum (i.e., has not been field tested) and may not be achievable due to structural concerns. Further engineering analysis would be necessary to confirm this flow. A flow of 70 cfs is normally provided by the minimum flow valve.

SCENARIO 3

MONGAUP RIVER PROJECTS RELICENSING - Request for Operations Model Run

Originator:	Rebecca Baldwin (counsel for HOOT) Steven Wilson (counsel for SBPOA)	**Date Requested:**	Oct. 4, 2019
Stakeholder:	Homeowners On Toronto (HOOT) Swinging Bridge Property Owners Association (SBPOA)	Please direct technical questions to Jim Booker, jbooker@siena.edu	

Required: Describe the resource(s) of interest and the anticipated benefit to the resource(s) as a result of this requested scenario.

A. Benefits reservoir recreation (public, marina, property owners) during recreation season Memorial Day through end of September. Maximum level below full pool keeps Swinging Bridge beaches exposed.

B. Benefits marinas and property owners through improved boat and dock removal for two weekends during October. (Note: drawdown of reservoirs can be sequential.)

C. Year round aesthetic and shoreline benefits to public recreation and property owners with higher water levels and less exposed shoreline.

D. Benefits power operations compared to Scenario 1 through reduced reservoir minimum elevations in summer.

Each scenario run will be compared with both the "Baseline 1" and "Baseline 2" conditions. "Baseline" project operating conditions follow the operating requirements of the existing FERC license as described below.

Baseline 1:
TOR: Pool elevations 1,220 ft to 1,170 ft. Minimum flow below dam of 10 cfs into Black Lake Creek

CLF: Pool elevations 1,071.1 ft to 1,049 ft. Minimum flow below dam of 10 cfs into Black Lake Creek

SWB: Pool elevations 1,070 ft to 1,049 ft. Minimum flow below dam of 100 cfs into Mongaup River.

MON: Pool elevations 935 ft to 927 ft (with pool elevation held within ± 1 foot from May 15 to Jun 30). Minimum flow below dam of 70 cfs into bypassed reach, plus 20 cfs leakage from powerhouse. Ramping rate of 2 units per hour change up and down.

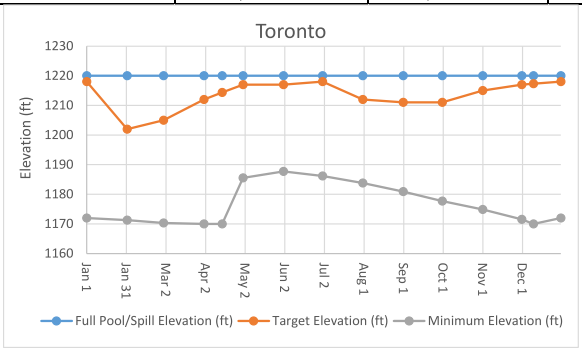
RIO: Pool elevations 815 ft to 807 ft (with pool elevation held within ± 1 foot from May 15 to June 30). Minimum flow below dam of 100 cfs into bypassed reach. Ramping rate of 1 unit per hour at Main Powerhouse change up and down. Recreation flows of a one-unit (435 cfs) or two-unit (870 cfs) release from the Main Powerhouse on alternating weekend days every other weekend between April 15 and October 31.

Baseline 2:
The Difference between the "Baseline 1" and "Baseline 2" scenarios is that in "Baseline 2" the SWB, MON and RIO minimum flows are "or inflow, but no less than 60 cfs".

Toronto

Pool Elevations – Spill, Target, Minimum (All elevations are NGVD 29 unless otherwise specified)

	Baseline			Alternative	
Date	Maximum/Full Pool Elevation (ft)	Minimum Elevation (ft)	Baseline Model Elevation (ft)	Maximum/Full Pool Elevation (ft)	Minimum Elevation (ft)
January 1	1,220.00	1,172.00	1,218.00		1205
February 1	1,220.00	1,171.30	1,202.00		1205
March 1	1,220.00	1,170.30	1,205.00		1205
April 1	1,220.00	1,170.00	1,212.00		1210
April 15	1,220.00	1,170.00	1,214.33		1210
May 1	1,220.00	1,185.50	1,217.00		1210
June 1	1,220.00	1,187.70	1,217.00		1220/ 1216
July 1	1,220.00	1,186.20	1,218.00		1216
August 1	1,220.00	1,183.80	1,212.00		1216
September 1	1,220.00	1,180.90	1,211.00		1216
October 1	1,220.00	1,177.70	1,211.00		1214/1205
November 1	1,220.00	1,174.90	1,215.00		1205
December 1	1,220.00	1,171.50	1,217.00		1205
December 10	1,220.00	1,170.00	1,217.30		1205
December 31	1,220.00	1,172.00	1,218.00		1205



Minimum Flows

Current: 10 cfs from dam into Black Lake Creek

Alternative: _____

Lake Level Stabilization

Current: None

Alternative: see below

Other

The HOOT and SBPOA preferred scenario for recreation season (Memorial Day to Sept. 30) is an average elevation of 1218 feet for Toronto and 1064 feet for Swinging Bridge. Memorial Day-only minimum is 1220 at Toronto and 1065 at Swinging Bridge.

Acceptable deviations from the mean are +/- 2 feet for Toronto and +1 foot/-2 feet for Swinging Bridge.

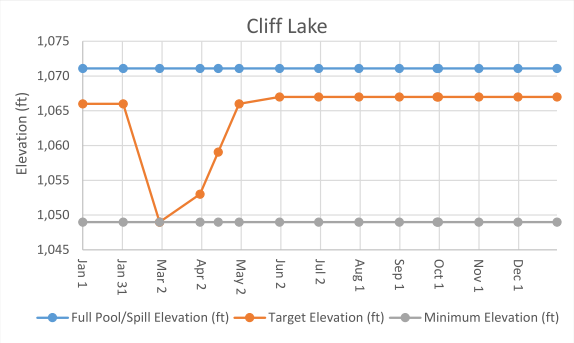
The minimum elevation schedule presented here is meant to approximate a slightly lower average under CHEOPS logic.

October minimum elevation through Oct. 15 is 1214 at Toronto and 1062 at Swinging Bridge, for boat removal; post-Oct. 15 min is 1205 at Toronto and 1052 at Swinging Bridge.

Cliff Lake

Pool Elevations – Spill, Target, Minimum (All elevations are NGVD 29 unless otherwise specified)

	Baseline			Alternative	
Date	**Maximum/Full Pool Elevation (ft)**	**Minimum Elevation (ft)**	**Baseline Model Elevation (ft)**	**Maximum/Full Pool Elevation (ft)**	**Minimum Elevation (ft)**
January 1	1,071.10	1,049.00	1,066.00		
February 1	1,071.10	1,049.00	1,066.00		
March 1	1,071.10	1,049.00	1,049.00		
April 1	1,071.10	1,049.00	1,053.00		
April 15	1,071.10	1,049.00	1,059.07		
May 1	1,071.10	1,049.00	1,066.00		
June 1	1,071.10	1,049.00	1,067.00		
July 1	1,071.10	1,049.00	1,066.00		
August 1	1,071.10	1,049.00	1,062.00		
September 1	1,071.10	1,049.00	1,061.50		
September 30	1,071.10	1,049.00	1,061.02		
October 1	1,071.10	1,049.00	1,061.00		
November 1	1,071.10	1,049.00	1,066.00		
December 1	1,071.10	1,049.00	1,066.00		
December 31	1,071.10	1,049.00	1,066.00		



Minimum Flows

Current: 10 cfs from dam into Black Lake Creek

Alternative: _____

Lake Level Stabilization

Current: None

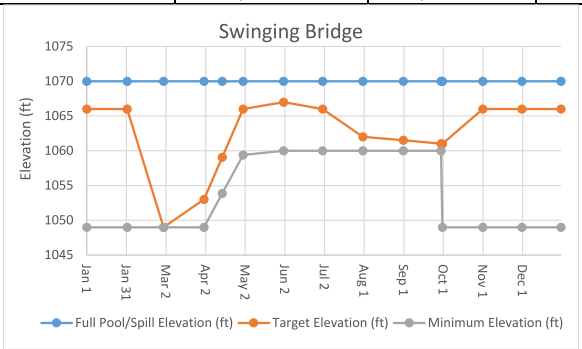
Alternative: _____

Other

Swinging Bridge

Pool Elevations – Spill, Target, Minimum (All elevations are NGVD 29 unless otherwise specified)

	Baseline				Alternative		
Date	Maximum/Full Pool Elevation (ft)	Minimum Elevation (ft)	Recreation Guideline Elevation (ft)	Baseline Model Elevation (ft)	Maximum/Full Pool Elevation (ft)	Minimum Elevation (ft)	Recreation Guideline Elevation (ft)
January 1	1,070.00	1,049.00		1,066.00	1068	1052	
February 1	1,070.00	1,049.00		1,066.00	1068	1052	
March 1	1,070.00	1,049.00		1,049.00	1068	1052	
April 1	1,070.00	1,049.00		1,053.00	1068	1057	
April 15	1,070.00	1,053.85		1,059.07	1068	1057	
May 1	1,070.00	1,059.40		1,066.00	1068	1057	
June 1	1,070.00	1,060.00	1063.00	1,067.00	1068	1065/1063	
July 1	1,070.00	1,060.00	1062.50	1,066.00	1068	1063	
August 1	1,070.00	1,060.00	1062.00	1,062.00	1068	1063	
September 1	1,070.00	1,060.00	1061.50	1,061.50	1068	1063	
September 30	1,070.00	1,060.00	1061.00	1,061.02	1068	1063	
October 1	1,070.00	1,049.00		1,061.00	1068	1062/1052	
November 1	1,070.00	1,049.00		1,066.00	1068	1052	
December 1	1,070.00	1,049.00		1,066.00	1068	1052	
December 31	1,070.00	1,049.00		1,066.00	1068	1052	



Minimum Flows

Current: 100 cfs (Baseline 1) or inflow (NLT 60 cfs) (Baseline 2) below dam into Mongaup River

Alternative: Baseline 2 minimum flow

Lake Level Stabilization

Current: None

Alternative: see below

Other

The HOOT and SBPOA preferred scenario for recreation season (Memorial Day to Sept. 30) is an average elevation of 1218 feet for Toronto and 1064 feet for Swinging Bridge. Memorial Day-only minimum is 1220 at Toronto and 1065 at Swinging Bridge.

Acceptable deviations from the mean are +/- 2 feet for Toronto and +1 foot/-2 feet for Swinging Bridge.

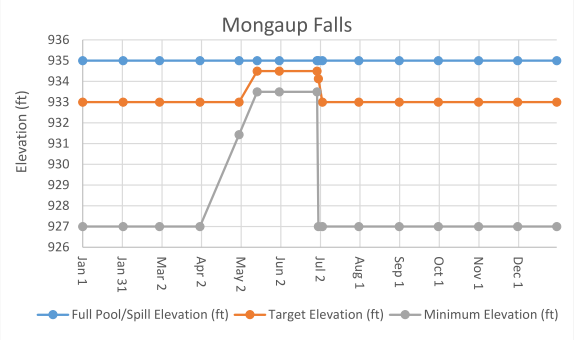
The minimum elevation schedule presented here is meant to approximate a slightly lower average under CHEOPS logic.

October minimum elevation through Oct. 15 is 1214 at Toronto and 1062 at Swinging Bridge, for boat removal; post-Oct. 15 min is 1205 at Toronto and 1052 at Swinging Bridge.

Mongaup Falls

Pool Elevations – Spill, Target, Minimum (All elevations are NGVD 29 unless otherwise specified)

	Baseline			Alternative	
Date	Maximum/Full Pool Elevation (ft)	Minimum Elevation (ft)	Baseline Model Elevation (ft)	Maximum/Full Pool Elevation (ft)	Minimum Elevation (ft)
January 1	935.00	927.00	933.00		
February 1	935.00	927.00	933.00		
March 1	935.00	927.00	933.00		
April 1	935.00	927.00	933.00		
May 1	935.00	931.43	933.00		
May 15	935.00	933.50	934.50		
June 1	935.00	933.50	934.50		
June 30	935.00	933.50	934.50		
July 1	935.00	927.00	934.13		
July 4	935.00	927.00	933.00		
August 1	935.00	927.00	933.00		
September 1	935.00	927.00	933.00		
October 1	935.00	927.00	933.00		
November 1	935.00	927.00	933.00		
December 1	935.00	927.00	933.00		
December 31	935.00	927.00	933.00		



Minimum Flows

Current: 70 cfs (Baseline 1) or inflow (NLT 60 cfs) (Baseline 2) into bypassed reach plus 20 cfs leakage though powerhouse into Mongaup River

Alternative: _____

Lake Level Stabilization

Current: Hold pool elevation within ±1 foot of starting elevation from May 15 to June 30

Alternative: _____

Ramping Rate

Current: 2 units/hour up/down

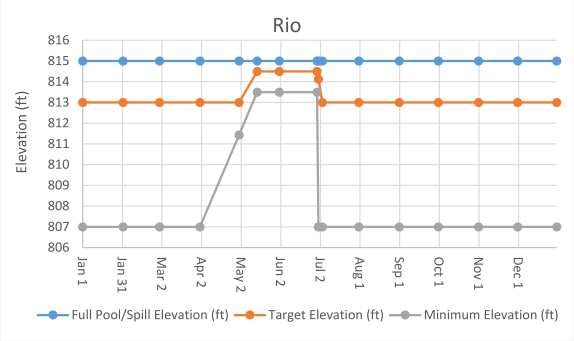
Alternative: _____

Other

Rio

Pool Elevations – Spill, Target, Minimum (All elevations are NGVD 29 unless otherwise specified)

	Baseline			Alternative	
Date	Maximum/Full Pool Elevation (ft)	Minimum Elevation (ft)	Baseline Model Elevation (ft)	Maximum/Full Pool Elevation (ft)	Minimum Elevation (ft)
January 1	815.00	807.00	813.00		
February 1	815.00	807.00	813.00		
March 1	815.00	807.00	813.00		
April 1	815.00	807.00	813.00		
May 1	815.00	811.43	813.00		
May 15	815.00	813.50	814.50		
June 1	815.00	813.50	814.50		
June 30	815.00	813.50	814.50		
July 1	815.00	807.00	814.13		
July 4	815.00	807.00	813.00		
August 1	815.00	807.00	813.00		
September 1	815.00	807.00	813.00		
October 1	815.00	807.00	813.00		
November 1	815.00	807.00	813.00		
December 1	815.00	807.00	813.00		
December 31	815.00	807.00	813.00		



Recreation Flows

	Dates	Flow (cfs) released from Development	Remarks	Start Hour	End Hour
Current	April 15 to Oct 31; alternating Saturdays and Sundays every other week.	435 (per unit)	Provide a one-unit (435 cfs) or two-unit (870 cfs) release from the Main Powerhouse on alternating weekend days every other weekend between April 15 and October 31.	1100	1500
Alternative					

Rio (cont.)

Minimum Flows

Current: 100 cfs (Baseline 1) or inflow (NLT 60 cfs) (Baseline 2) into bypassed reach

Alternative: _____

Lake Level Stabilization

Current: Hold pool elevation within ±1 foot of starting elevation from May 15 to June 30

Alternative: _____

Ramping Rate

Current: 1 unit/hour up/down (Main Powerhouse)

Alternative: _____

Other

The maximum hydraulic capacities of the units and discharge valves at each project are as follows:

Development	Structure	Hydraulic Capacity (cfs)	Discharge Location
Toronto	Discharge Tunnel	620[1]	Into Black Lake Creek at dam
Cliff Lake	Discharge Tunnel	430[1]	Into Black Lake Creek at dam
Swinging Bridge	Unit 2	1,015	Into Mongaup River at toe of non-overflow dam
	Unit 3 (under construction)	60 – 125	
	Minimum Flow Discharge Valve	up to 150[1]	
Mongaup Falls	Units 1, 2, 3, 4	155 (each)	Into Mongaup River at powerhouse
	Minimum Flow Discharge Valve	up to 475[2]	Into bypassed reach at dam
Rio	Units 1, 2	435 (each)	Into lower Mongaup River at Main Powerhouse
	Unit 3	60 - 120	Into bypassed reach at dam
	Minimum Flow Discharge Valve	up to 160[1]	Into bypassed reach just downstream of dam

[1]The listed maximum flow is contingent upon maximum head conditions (i.e., full pool). If full pool conditions are not available, the maximum flow will be reduced.
[2]A maximum flow of 475 cfs from the minimum flow valve is considered a theoretical maximum (i.e., has not been field tested) and may not be achievable due to structural concerns. Further engineering analysis would be necessary to confirm this flow. A flow of 70 cfs is normally provided by the minimum flow valve.

SCENARIO 4

MONGAUP RIVER PROJECTS RELICENSING - Request for Operations Model Run

Originator:	Rebecca Baldwin (counsel for HOOT) Steven Wilson (counsel for SBPOA)	**Date Requested:**	Oct. 4, 2019
Stakeholder:	Homeowners On Toronto (HOOT) Swinging Bridge Property Owners Association (SBPOA)	Please direct technical questions to Jim Booker, jbooker@siena.edu	

Required: Describe the resource(s) of interest and the anticipated benefit to the resource(s) as a result of this requested scenario.

A. Benefits reservoir recreation (public, marina, property owners) during recreation season Memorial Day through end of September. Maximum level below full pool keeps Swinging Bridge beaches exposed.

B. Benefits marinas and property owners through improved boat and dock removal for two weekends during October. (Note: drawdown of reservoirs can be sequential.)

C. Benefits power operations compared to Scenario 1 through reduced reservoir minimum elevations in winter.

Each scenario run will be compared with both the "Baseline 1" and "Baseline 2" conditions. "Baseline" project operating conditions follow the operating requirements of the existing FERC license as described below.

Baseline 1:
TOR: Pool elevations 1,220 ft to 1,170 ft. Minimum flow below dam of 10 cfs into Black Lake Creek

CLF: Pool elevations 1,071.1 ft to 1,049 ft. Minimum flow below dam of 10 cfs into Black Lake Creek

SWB: Pool elevations 1,070 ft to 1,049 ft. Minimum flow below dam of 100 cfs into Mongaup River.

MON: Pool elevations 935 ft to 927 ft (with pool elevation held within ± 1 foot from May 15 to Jun 30). Minimum flow below dam of 70 cfs into bypassed reach, plus 20 cfs leakage from powerhouse. Ramping rate of 2 units per hour change up and down.

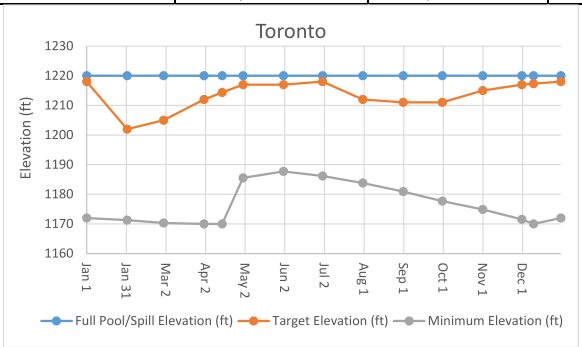
RIO: Pool elevations 815 ft to 807 ft (with pool elevation held within ± 1 foot from May 15 to June 30). Minimum flow below dam of 100 cfs into bypassed reach. Ramping rate of 1 unit per hour at Main Powerhouse change up and down. Recreation flows of a one-unit (435 cfs) or two-unit (870 cfs) release from the Main Powerhouse on alternating weekend days every other weekend between April 15 and October 31.

Baseline 2:
The Difference between the "Baseline 1" and "Baseline 2" scenarios is that in "Baseline 2" the SWB, MON and RIO minimum flows are "or inflow, but no less than 60 cfs".

Toronto

Pool Elevations – Spill, Target, Minimum (All elevations are NGVD 29 unless otherwise specified)

	Baseline			Alternative	
Date	Maximum/Full Pool Elevation (ft)	Minimum Elevation (ft)	Baseline Model Elevation (ft)	Maximum/Full Pool Elevation (ft)	Minimum Elevation (ft)
January 1	1,220.00	1,172.00	1,218.00		
February 1	1,220.00	1,171.30	1,202.00		
March 1	1,220.00	1,170.30	1,205.00		
April 1	1,220.00	1,170.00	1,212.00		1210
April 15	1,220.00	1,170.00	1,214.33		1210
May 1	1,220.00	1,185.50	1,217.00		1210
June 1	1,220.00	1,187.70	1,217.00		1220/1218
July 1	1,220.00	1,186.20	1,218.00		1218
August 1	1,220.00	1,183.80	1,212.00		1218
September 1	1,220.00	1,180.90	1,211.00		1218
October 1	1,220.00	1,177.70	1,211.00		1214
November 1	1,220.00	1,174.90	1,215.00		
December 1	1,220.00	1,171.50	1,217.00		
December 10	1,220.00	1,170.00	1,217.30		
December 31	1,220.00	1,172.00	1,218.00		



Minimum Flows

Current: 10 cfs from dam into Black Lake Creek

Alternative: _____

Lake Level Stabilization

Current: None

Alternative: see below

Other

The HOOT and SBPOA preferred scenario for recreation season (Memorial Day to Sept. 30) is an average elevation of 1218 feet for Toronto and 1064 feet for Swinging Bridge. Memorial Day-only minimum is 1220 at Toronto and 1065 at Swinging Bridge.

Acceptable deviations from the mean are +/- 2 feet for Toronto and +1 foot/-2 feet for Swinging Bridge.

The minimum elevation schedule presented here is meant to approximate this outcome under CHEOPS logic.

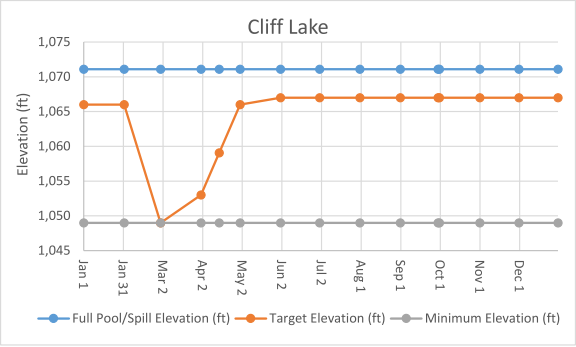
If a "look back" function is available to update daily minimums within model runs and thus achieve the two averages, this would be an alternative way to model this scenario.

October minimum elevation through Oct. 15 is 1214 at Toronto and 1062 at Swinging Bridge, for boat removal; post-Oct. 15 min at each reservoir is the current license minimum.

Cliff Lake

Pool Elevations – Spill, Target, Minimum (All elevations are NGVD 29 unless otherwise specified)

	Baseline			Alternative	
Date	Maximum/Full Pool Elevation (ft)	Minimum Elevation (ft)	Baseline Model Elevation (ft)	Maximum/Full Pool Elevation (ft)	Minimum Elevation (ft)
January 1	1,071.10	1,049.00	1,066.00		
February 1	1,071.10	1,049.00	1,066.00		
March 1	1,071.10	1,049.00	1,049.00		
April 1	1,071.10	1,049.00	1,053.00		
April 15	1,071.10	1,049.00	1,059.07		
May 1	1,071.10	1,049.00	1,066.00		
June 1	1,071.10	1,049.00	1,067.00		
July 1	1,071.10	1,049.00	1,066.00		
August 1	1,071.10	1,049.00	1,062.00		
September 1	1,071.10	1,049.00	1,061.50		
September 30	1,071.10	1,049.00	1,061.02		
October 1	1,071.10	1,049.00	1,061.00		
November 1	1,071.10	1,049.00	1,066.00		
December 1	1,071.10	1,049.00	1,066.00		
December 31	1,071.10	1,049.00	1,066.00		



Minimum Flows

Current: 10 cfs from dam into Black Lake Creek

Alternative: _____

Lake Level Stabilization

Current: None

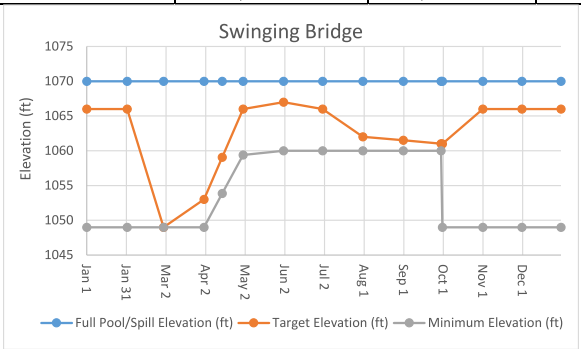
Alternative: _____

Other

Swinging Bridge

Pool Elevations – Spill, Target, Minimum (All elevations are NGVD 29 unless otherwise specified)

	Baseline				Alternative		
Date	Maximum/Full Pool Elevation (ft)	Minimum Elevation (ft)	Recreation Guideline Elevation (ft)	Baseline Model Elevation (ft)	Maximum/Full Pool Elevation (ft)	Minimum Elevation (ft)	Recreation Guideline Elevation (ft)
January 1	1,070.00	1,049.00		1,066.00	1068		
February 1	1,070.00	1,049.00		1,066.00	1068		
March 1	1,070.00	1,049.00		1,049.00	1068		
April 1	1,070.00	1,049.00		1,053.00	1068	1057	
April 15	1,070.00	1,053.85		1,059.07	1068	1057	
May 1	1,070.00	1,059.40		1,066.00	1068	1057	
June 1	1,070.00	1,060.00	1063.00	1,067.00	1068	1065/1064	
July 1	1,070.00	1,060.00	1062.50	1,066.00	1068	1064	
August 1	1,070.00	1,060.00	1062.00	1,062.00	1068	1064	
September 1	1,070.00	1,060.00	1061.50	1,061.50	1068	1064	
September 30	1,070.00	1,060.00	1061.00	1,061.02	1068	1064	
October 1	1,070.00	1,049.00		1,061.00	1068	1062	
November 1	1,070.00	1,049.00		1,066.00	1068		
December 1	1,070.00	1,049.00		1,066.00	1068		
December 31	1,070.00	1,049.00		1,066.00	1068		



Minimum Flows

Current: 100 cfs (Baseline 1) or inflow (NLT 60 cfs) (Baseline 2) below dam into Mongaup River

Alternative: Baseline 2 minimum flow

Lake Level Stabilization

Current: None

Alternative: see below

Other

The HOOT and SBPOA preferred scenario for recreation season (Memorial Day to Sept. 30) is an average elevation of 1218 feet for Toronto and 1064 feet for Swinging Bridge. Memorial Day-only minimum is 1220 at Toronto and 1065 at Swinging Bridge.

Acceptable deviations from the mean are +/- 2 feet for Toronto and +1 foot/-2 feet for Swinging Bridge.

The minimum elevation schedule presented here is meant to approximate this outcome under CHEOPS logic.

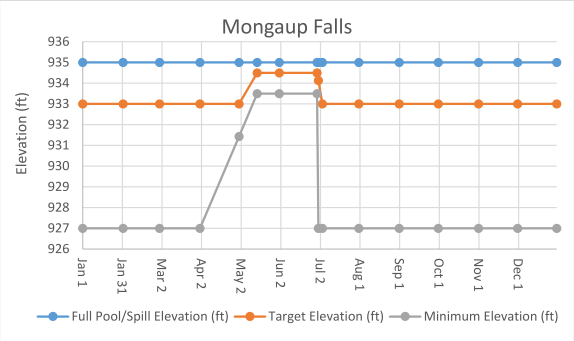
If a "look back" function is available to update daily minimums within model runs and thus achieve the two averages this would be an alternative way to model this scenario.

October minimum elevation through Oct. 15 is 1214 at Toronto and 1062 at Swinging Bridge, for boat removal; post-Oct. 15 min at each reservoir is the current license minimum.

Mongaup Falls

Pool Elevations – Spill, Target, Minimum (All elevations are NGVD 29 unless otherwise specified)

	Baseline			Alternative	
Date	Maximum/Full Pool Elevation (ft)	Minimum Elevation (ft)	Baseline Model Elevation (ft)	Maximum/Full Pool Elevation (ft)	Minimum Elevation (ft)
January 1	935.00	927.00	933.00		
February 1	935.00	927.00	933.00		
March 1	935.00	927.00	933.00		
April 1	935.00	927.00	933.00		
May 1	935.00	931.43	933.00		
May 15	935.00	933.50	934.50		
June 1	935.00	933.50	934.50		
June 30	935.00	933.50	934.50		
July 1	935.00	927.00	934.13		
July 4	935.00	927.00	933.00		
August 1	935.00	927.00	933.00		
September 1	935.00	927.00	933.00		
October 1	935.00	927.00	933.00		
November 1	935.00	927.00	933.00		
December 1	935.00	927.00	933.00		
December 31	935.00	927.00	933.00		



Minimum Flows

Current: 70 cfs (Baseline 1) or inflow (NLT 60 cfs) (Baseline 2) into bypassed reach plus 20 cfs leakage though powerhouse into Mongaup River

Alternative: _____

Lake Level Stabilization

Current: Hold pool elevation within ±1 foot of starting elevation from May 15 to June 30

Alternative: _____

Ramping Rate

Current: 2 units/hour up/down

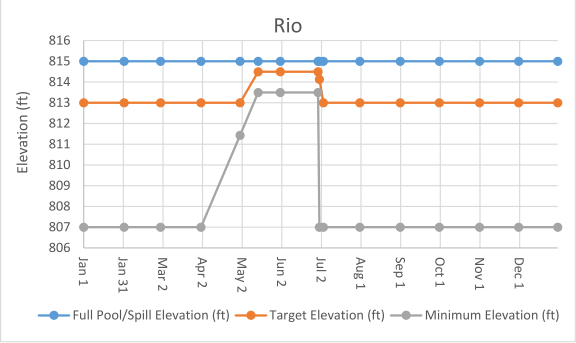
Alternative: _____

Other

Rio

Pool Elevations – Spill, Target, Minimum (All elevations are NGVD 29 unless otherwise specified)

	Baseline			Alternative	
Date	Maximum/Full Pool Elevation (ft)	Minimum Elevation (ft)	Baseline Model Elevation (ft)	Maximum/Full Pool Elevation (ft)	Minimum Elevation (ft)
January 1	815.00	807.00	813.00		
February 1	815.00	807.00	813.00		
March 1	815.00	807.00	813.00		
April 1	815.00	807.00	813.00		
May 1	815.00	811.43	813.00		
May 15	815.00	813.50	814.50		
June 1	815.00	813.50	814.50		
June 30	815.00	813.50	814.50		
July 1	815.00	807.00	814.13		
July 4	815.00	807.00	813.00		
August 1	815.00	807.00	813.00		
September 1	815.00	807.00	813.00		
October 1	815.00	807.00	813.00		
November 1	815.00	807.00	813.00		
December 1	815.00	807.00	813.00		
December 31	815.00	807.00	813.00		



Recreation Flows

	Dates	Flow (cfs) released from Development	Remarks	Start Hour	End Hour
Current	April 15 to Oct 31; alternating Saturdays and Sundays every other week.	435 (per unit)	Provide a one-unit (435 cfs) or two-unit (870 cfs) release from the Main Powerhouse on alternating weekend days every other weekend between April 15 and October 31.	1100	1500
Alternative					

Rio (cont.)

Minimum Flows

Current: 100 cfs (Baseline 1) or inflow (NLT 60 cfs) (Baseline 2) into bypassed reach

Alternative: _____

Lake Level Stabilization

Current: Hold pool elevation within ±1 foot of starting elevation from May 15 to June 30

Alternative: _____

Ramping Rate

Current: 1 unit/hour up/down (Main Powerhouse)

Alternative: _____

Other

The maximum hydraulic capacities of the units and discharge valves at each project are as follows:

Development	Structure	Hydraulic Capacity (cfs)	Discharge Location
Toronto	Discharge Tunnel	620[1]	Into Black Lake Creek at dam
Cliff Lake	Discharge Tunnel	430[1]	Into Black Lake Creek at dam
Swinging Bridge	Unit 2	1,015	Into Mongaup River at toe of non-overflow dam
	Unit 3 (under construction)	60 – 125	
	Minimum Flow Discharge Valve	up to 150[1]	
Mongaup Falls	Units 1, 2, 3, 4	155 (each)	Into Mongaup River at powerhouse
	Minimum Flow Discharge Valve	up to 475[2]	Into bypassed reach at dam
Rio	Units 1, 2	435 (each)	Into lower Mongaup River at Main Powerhouse
	Unit 3	60 - 120	Into bypassed reach at dam
	Minimum Flow Discharge Valve	up to 160[1]	Into bypassed reach just downstream of dam

[1]The listed maximum flow is contingent upon maximum head conditions (i.e., full pool). If full pool conditions are not available, the maximum flow will be reduced.
[2]A maximum flow of 475 cfs from the minimum flow valve is considered a theoretical maximum (i.e., has not been field tested) and may not be achievable due to structural concerns. Further engineering analysis would be necessary to confirm this flow. A flow of 70 cfs is normally provided by the minimum flow valve.

SCENARIO 5

MONGAUP RIVER PROJECTS RELICENSING - Request for Operations Model Run

Originator: Rebecca Baldwin (counsel for HOOT); Steven Wilson (counsel for SBPOA) **Date Requested:** Oct. 4, 2019

Stakeholder: Homeowners On Toronto (HOOT); Swinging Bridge Property Owners Association (SBPOA) Please direct technical questions to Jim Booker, jbooker@siena.edu

Required: Describe the resource(s) of interest and the anticipated benefit to the resource(s) as a result of this requested scenario.

A. Benefits reservoir recreation (public, marina, property owners) during recreation season Memorial Day through end of September. Maximum level below full pool keeps Swinging Bridge beaches exposed.

B. Benefits marinas and property owners through improved boat and dock removal for two weekends during October. (Note: drawdown of reservoirs can be sequential.)

C. Year round aesthetic and shoreline benefits to public recreation and property owners with higher water levels and less exposed shoreline.

D. Enhanced ability to meet emergency drought call of up to 15 billion gallons from the Delaware River Basin Commission. (Elevations of 1210/1057 maintain about 46,000 acre-feet of storage in upper reservoirs Toronto, SB, and Cliff, or 15 billion gallons of total storage.)

Each scenario run will be compared with both the "Baseline 1" and "Baseline 2" conditions. "Baseline" project operating conditions follow the operating requirements of the existing FERC license as described below.

Baseline 1:
TOR: Pool elevations 1,220 ft to 1,170 ft. Minimum flow below dam of 10 cfs into Black Lake Creek

CLF: Pool elevations 1,071.1 ft to 1,049 ft. Minimum flow below dam of 10 cfs into Black Lake Creek

SWB: Pool elevations 1,070 ft to 1,049 ft. Minimum flow below dam of 100 cfs into Mongaup River.

MON: Pool elevations 935 ft to 927 ft (with pool elevation held within ± 1 foot from May 15 to Jun 30). Minimum flow below dam of 70 cfs into bypassed reach, plus 20 cfs leakage from powerhouse. Ramping rate of 2 units per hour change up and down.

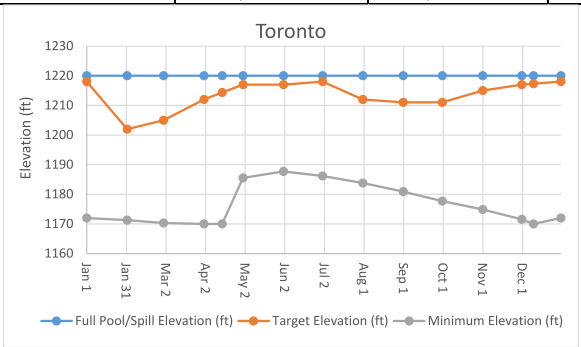
RIO: Pool elevations 815 ft to 807 ft (with pool elevation held within ± 1 foot from May 15 to June 30). Minimum flow below dam of 100 cfs into bypassed reach. Ramping rate of 1 unit per hour at Main Powerhouse change up and down. Recreation flows of a one-unit (435 cfs) or two-unit (870 cfs) release from the Main Powerhouse on alternating weekend days every other weekend between April 15 and October 31.

Baseline 2:
The Difference between the "Baseline 1" and "Baseline 2" scenarios is that in "Baseline 2" the SWB, MON and RIO minimum flows are "or inflow, but no less than 60 cfs".

Toronto

Pool Elevations – Spill, Target, Minimum (All elevations are NGVD 29 unless otherwise specified)

	Baseline			Alternative	
Date	Maximum/Full Pool Elevation (ft)	Minimum Elevation (ft)	Baseline Model Elevation (ft)	Maximum/Full Pool Elevation (ft)	Minimum Elevation (ft)
January 1	1,220.00	1,172.00	1,218.00		1205
February 1	1,220.00	1,171.30	1,202.00		1205
March 1	1,220.00	1,170.30	1,205.00		1205
April 1	1,220.00	1,170.00	1,212.00		1210
April 15	1,220.00	1,170.00	1,214.33		1210
May 1	1,220.00	1,185.50	1,217.00		1210
June 1	1,220.00	1,187.70	1,217.00		1220/1218
July 1	1,220.00	1,186.20	1,218.00		1218
August 1	1,220.00	1,183.80	1,212.00		1218
September 1	1,220.00	1,180.90	1,211.00		1218
October 1	1,220.00	1,177.70	1,211.00		1214/1210
November 1	1,220.00	1,174.90	1,215.00		1210
December 1	1,220.00	1,171.50	1,217.00		1210
December 10	1,220.00	1,170.00	1,217.30		1210
December 31	1,220.00	1,172.00	1,218.00		1210



Minimum Flows

Current: 10 cfs from dam into Black Lake Creek

Alternative: _____

Lake Level Stabilization

Current: None

Alternative: see below

Other

The HOOT and SBPOA preferred scenario for recreation season (Memorial Day to Sept. 30) is an average elevation of 1218 feet for Toronto and 1064 feet for Swinging Bridge. Memorial Day-only minimum is 1220 at Toronto and 1065 at Swinging Bridge.

Acceptable deviations from the mean are +/- 2 feet for Toronto and +1 foot/-2 feet for Swinging Bridge.

The minimum elevation schedule presented here is meant to approximate this outcome under CHEOPS logic.

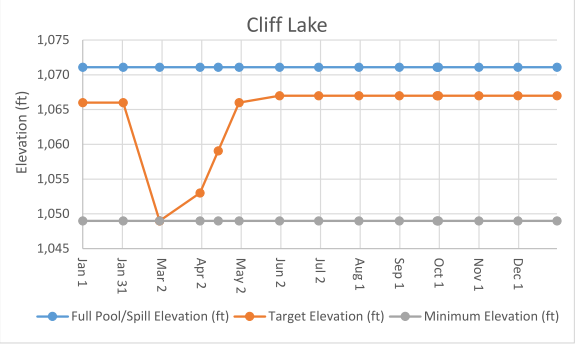
If a "look back" function is available to update daily minimums within model runs and thus achieve the two averages, this would be an alternative way to model this scenario.

October minimum elevation through Oct. 15 is 1214 at Toronto and 1062 at Swinging Bridge, for boat removal; post-Oct. 15 min is 1210 at Toronto and 1057 at Swinging Bridge.

Cliff Lake

Pool Elevations – Spill, Target, Minimum (All elevations are NGVD 29 unless otherwise specified)

	Baseline			Alternative	
Date	Maximum/Full Pool Elevation (ft)	Minimum Elevation (ft)	Baseline Model Elevation (ft)	Maximum/Full Pool Elevation (ft)	Minimum Elevation (ft)
January 1	1,071.10	1,049.00	1,066.00		
February 1	1,071.10	1,049.00	1,066.00		
March 1	1,071.10	1,049.00	1,049.00		
April 1	1,071.10	1,049.00	1,053.00		
April 15	1,071.10	1,049.00	1,059.07		
May 1	1,071.10	1,049.00	1,066.00		
June 1	1,071.10	1,049.00	1,067.00		
July 1	1,071.10	1,049.00	1,066.00		
August 1	1,071.10	1,049.00	1,062.00		
September 1	1,071.10	1,049.00	1,061.50		
September 30	1,071.10	1,049.00	1,061.02		
October 1	1,071.10	1,049.00	1,061.00		
November 1	1,071.10	1,049.00	1,066.00		
December 1	1,071.10	1,049.00	1,066.00		
December 31	1,071.10	1,049.00	1,066.00		



Minimum Flows

Current: 10 cfs from dam into Black Lake Creek

Alternative: _____

Lake Level Stabilization

Current: None

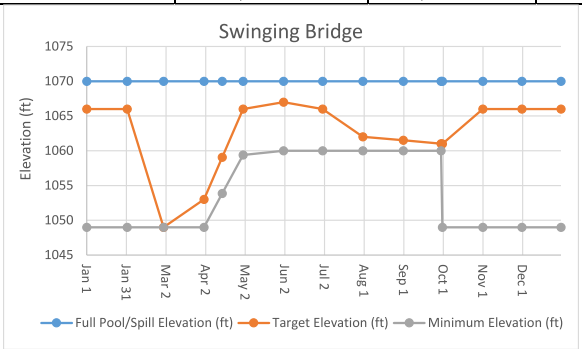
Alternative: _____

Other

Swinging Bridge

Pool Elevations – Spill, Target, Minimum (All elevations are NGVD 29 unless otherwise specified)

	Baseline				Alternative		
Date	Maximum/Full Pool Elevation (ft)	Minimum Elevation (ft)	Recreation Guideline Elevation (ft)	Baseline Model Elevation (ft)	Maximum/Full Pool Elevation (ft)	Minimum Elevation (ft)	Recreation Guideline Elevation (ft)
January 1	1,070.00	1,049.00		1,066.00	1068	1052	
February 1	1,070.00	1,049.00		1,066.00	1068	1052	
March 1	1,070.00	1,049.00		1,049.00	1068	1052	
April 1	1,070.00	1,049.00		1,053.00	1068	1057	
April 15	1,070.00	1,053.85		1,059.07	1068	1057	
May 1	1,070.00	1,059.40		1,066.00	1068	1057	
June 1	1,070.00	1,060.00	1063.00	1,067.00	1068	1065/1064	
July 1	1,070.00	1,060.00	1062.50	1,066.00	1068	1064	
August 1	1,070.00	1,060.00	1062.00	1,062.00	1068	1064	
September 1	1,070.00	1,060.00	1061.50	1,061.50	1068	1064	
September 30	1,070.00	1,060.00	1061.00	1,061.02	1068	1064	
October 1	1,070.00	1,049.00		1,061.00	1068	1062/1057	
November 1	1,070.00	1,049.00		1,066.00	1068	1057	
December 1	1,070.00	1,049.00		1,066.00	1068	1057	
December 31	1,070.00	1,049.00		1,066.00	1068	1057	



Minimum Flows

Current: 100 cfs (Baseline 1) or inflow (NLT 60 cfs) (Baseline 2) below dam into Mongaup River

Alternative: Baseline 2 minimum flow

Lake Level Stabilization

Current: None

Alternative: see below

Other

The HOOT and SBPOA preferred scenario for recreation season (Memorial Day to Sept. 30) is an average elevation of 1218 feet for Toronto and 1064 feet for Swinging Bridge. Memorial Day-only minimum is 1220 at Toronto and 1065 at Swinging Bridge.

Acceptable deviations from the mean are +/- 2 feet for Toronto and +1 foot/-2 feet for Swinging Bridge.

The minimum elevation schedule presented here is meant to approximate this outcome under CHEOPS logic.

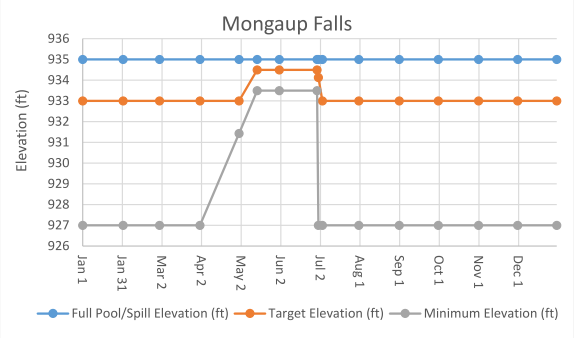
If a "look back" function is available to update daily minimums within model runs and thus achieve the two averages this would be an alternative way to model this scenario.

October minimum elevation through Oct. 15 is 1214 at Toronto and 1062 at Swinging Bridge, for boat removal; post-Oct. 15 min is 1210 at Toronto and 1057 at Swinging Bridge.

Mongaup Falls

Pool Elevations – Spill, Target, Minimum (All elevations are NGVD 29 unless otherwise specified)

	Baseline			Alternative	
Date	Maximum/Full Pool Elevation (ft)	Minimum Elevation (ft)	Baseline Model Elevation (ft)	Maximum/Full Pool Elevation (ft)	Minimum Elevation (ft)
January 1	935.00	927.00	933.00		
February 1	935.00	927.00	933.00		
March 1	935.00	927.00	933.00		
April 1	935.00	927.00	933.00		
May 1	935.00	931.43	933.00		
May 15	935.00	933.50	934.50		
June 1	935.00	933.50	934.50		
June 30	935.00	933.50	934.50		
July 1	935.00	927.00	934.13		
July 4	935.00	927.00	933.00		
August 1	935.00	927.00	933.00		
September 1	935.00	927.00	933.00		
October 1	935.00	927.00	933.00		
November 1	935.00	927.00	933.00		
December 1	935.00	927.00	933.00		
December 31	935.00	927.00	933.00		



Minimum Flows

Current: 70 cfs (Baseline 1) or inflow (NLT 60 cfs) (Baseline 2) into bypassed reach plus 20 cfs leakage though powerhouse into Mongaup River

Alternative: _____

Lake Level Stabilization

Current: Hold pool elevation within ±1 foot of starting elevation from May 15 to June 30

Alternative: _____

Ramping Rate

Current: 2 units/hour up/down

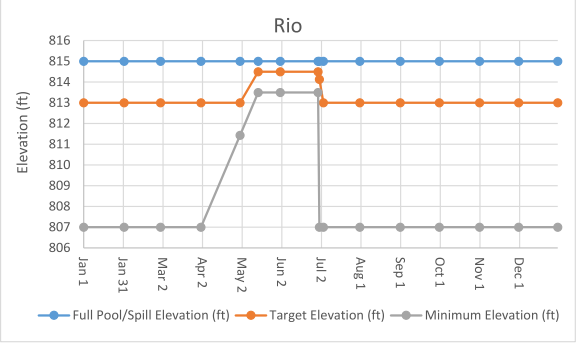
Alternative: _____

Other

Rio

Pool Elevations – Spill, Target, Minimum (All elevations are NGVD 29 unless otherwise specified)

	Baseline			Alternative	
Date	Maximum/Full Pool Elevation (ft)	Minimum Elevation (ft)	Baseline Model Elevation (ft)	Maximum/Full Pool Elevation (ft)	Minimum Elevation (ft)
January 1	815.00	807.00	813.00		
February 1	815.00	807.00	813.00		
March 1	815.00	807.00	813.00		
April 1	815.00	807.00	813.00		
May 1	815.00	811.43	813.00		
May 15	815.00	813.50	814.50		
June 1	815.00	813.50	814.50		
June 30	815.00	813.50	814.50		
July 1	815.00	807.00	814.13		
July 4	815.00	807.00	813.00		
August 1	815.00	807.00	813.00		
September 1	815.00	807.00	813.00		
October 1	815.00	807.00	813.00		
November 1	815.00	807.00	813.00		
December 1	815.00	807.00	813.00		
December 31	815.00	807.00	813.00		



Recreation Flows

	Dates	Flow (cfs) released from Development	Remarks	Start Hour	End Hour
Current	April 15 to Oct 31; alternating Saturdays and Sundays every other week.	435 (per unit)	Provide a one-unit (435 cfs) or two-unit (870 cfs) release from the Main Powerhouse on alternating weekend days every other weekend between April 15 and October 31.	1100	1500
Alternative					

Rio (cont.)

Minimum Flows

Current: 100 cfs (Baseline 1) or inflow (NLT 60 cfs) (Baseline 2) into bypassed reach

Alternative: _____

Lake Level Stabilization

Current: Hold pool elevation within ±1 foot of starting elevation from May 15 to June 30

Alternative: _____

Ramping Rate

Current: 1 unit/hour up/down (Main Powerhouse)

Alternative: _____

Other

The maximum hydraulic capacities of the units and discharge valves at each project are as follows:

Development	Structure	Hydraulic Capacity (cfs)	Discharge Location
Toronto	Discharge Tunnel	620[1]	Into Black Lake Creek at dam
Cliff Lake	Discharge Tunnel	430[1]	Into Black Lake Creek at dam
Swinging Bridge	Unit 2	1,015	Into Mongaup River at toe of non-overflow dam
	Unit 3 (under construction)	60 – 125	
	Minimum Flow Discharge Valve	up to 150[1]	
Mongaup Falls	Units 1, 2, 3, 4	155 (each)	Into Mongaup River at powerhouse
	Minimum Flow Discharge Valve	up to 475[2]	Into bypassed reach at dam
Rio	Units 1, 2	435 (each)	Into lower Mongaup River at Main Powerhouse
	Unit 3	60 - 120	Into bypassed reach at dam
	Minimum Flow Discharge Valve	up to 160[1]	Into bypassed reach just downstream of dam

[1]The listed maximum flow is contingent upon maximum head conditions (i.e., full pool). If full pool conditions are not available, the maximum flow will be reduced.
[2]A maximum flow of 475 cfs from the minimum flow valve is considered a theoretical maximum (i.e., has not been field tested) and may not be achievable due to structural concerns. Further engineering analysis would be necessary to confirm this flow. A flow of 70 cfs is normally provided by the minimum flow valve.

SCENARIO 6

MONGAUP RIVER PROJECTS RELICENSING - Request for Operations Model Run

Originator: Rebecca Baldwin (counsel for HOOT); Steven Wilson (counsel for SBPOA) **Date Requested:** Oct. 4, 2019

Stakeholder: Homeowners On Toronto (HOOT); Swinging Bridge Property Owners Association (SBPOA) Please direct technical questions to Jim Booker, jbooker@siena.edu

Required: Describe the resource(s) of interest and the anticipated benefit to the resource(s) as a result of this requested scenario.

A. Benefits reservoir recreation (public, marina, property owners) during recreation season Memorial Day through end of September. Maximum level below full pool keeps Swinging Bridge beaches exposed.

B. Benefits marinas and property owners through improved boat and dock removal for two weekends during October. (Note: drawdown of reservoirs can be sequential.)

C. Year round aesthetic and shoreline benefits to public recreation and property owners with higher water levels and less exposed shoreline.

D. Benefits power operations compared to Request #1 through more flexible reservoir filling schedule.

Each scenario run will be compared with both the "Baseline 1" and "Baseline 2" conditions. "Baseline" project operating conditions follow the operating requirements of the existing FERC license as described below.

Baseline 1:
TOR: Pool elevations 1,220 ft to 1,170 ft. Minimum flow below dam of 10 cfs into Black Lake Creek

CLF: Pool elevations 1,071.1 ft to 1,049 ft. Minimum flow below dam of 10 cfs into Black Lake Creek

SWB: Pool elevations 1,070 ft to 1,049 ft. Minimum flow below dam of 100 cfs into Mongaup River.

MON: Pool elevations 935 ft to 927 ft (with pool elevation held within ± 1 foot from May 15 to Jun 30). Minimum flow below dam of 70 cfs into bypassed reach, plus 20 cfs leakage from powerhouse. Ramping rate of 2 units per hour change up and down.

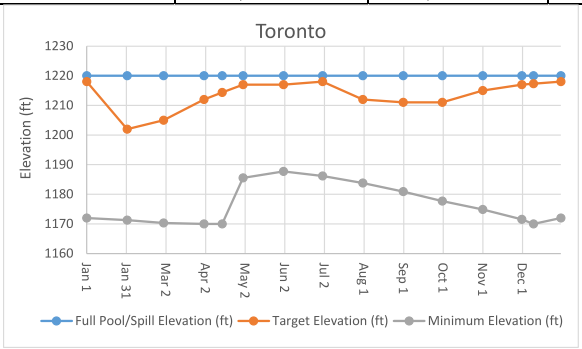
RIO: Pool elevations 815 ft to 807 ft (with pool elevation held within ± 1 foot from May 15 to June 30). Minimum flow below dam of 100 cfs into bypassed reach. Ramping rate of 1 unit per hour at Main Powerhouse change up and down. Recreation flows of a one-unit (435 cfs) or two-unit (870 cfs) release from the Main Powerhouse on alternating weekend days every other weekend between April 15 and October 31.

Baseline 2:
The Difference between the "Baseline 1" and "Baseline 2" scenarios is that in "Baseline 2" the SWB, MON and RIO minimum flows are "or inflow, but no less than 60 cfs".

Toronto

Pool Elevations – Spill, Target, Minimum (All elevations are NGVD 29 unless otherwise specified)

	Baseline			Alternative	
Date	Maximum/Full Pool Elevation (ft)	Minimum Elevation (ft)	Baseline Model Elevation (ft)	Maximum/Full Pool Elevation (ft)	Minimum Elevation (ft)
January 1	1,220.00	1,172.00	1,218.00		1205
February 1	1,220.00	1,171.30	1,202.00		1205
March 1	1,220.00	1,170.30	1,205.00		1205
April 1	1,220.00	1,170.00	1,212.00		1205
April 15	1,220.00	1,170.00	1,214.33		1205
May 1	1,220.00	1,185.50	1,217.00		1205
June 1	1,220.00	1,187.70	1,217.00		1220/ 1218
July 1	1,220.00	1,186.20	1,218.00		1218
August 1	1,220.00	1,183.80	1,212.00		1218
September 1	1,220.00	1,180.90	1,211.00		1218
October 1	1,220.00	1,177.70	1,211.00		1214/1205
November 1	1,220.00	1,174.90	1,215.00		1205
December 1	1,220.00	1,171.50	1,217.00		1205
December 10	1,220.00	1,170.00	1,217.30		1205
December 31	1,220.00	1,172.00	1,218.00		1205



Minimum Flows

Current: 10 cfs from dam into Black Lake Creek

Alternative: _____

Lake Level Stabilization

Current: None

Alternative: see below

Other

The HOOT and SBPOA preferred scenario for recreation season (Memorial Day to Sept. 30) is an average elevation of 1218 feet for Toronto and 1064 feet for Swinging Bridge. Memorial Day-only minimum is 1220 at Toronto and 1065 at Swinging Bridge.

Acceptable deviations from the mean are +/- 2 feet for Toronto and +1 foot/-2 feet for Swinging Bridge.

The minimum elevation schedule presented here is meant to approximate this outcome under CHEOPS logic.

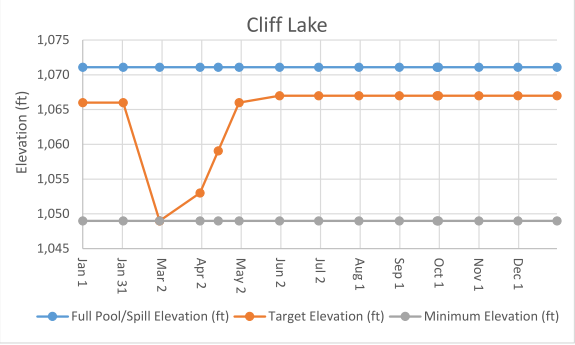
If a "look back" function is available to update daily minimums within model runs and thus achieve the two averages, this would be an alternative way to model this scenario.

October minimum elevation through Oct. 15 is 1214 at Toronto and 1062 at Swinging Bridge, for boat removal; post-Oct. 15 min is 1205 at Toronto and 1052 at Swinging Bridge.

Cliff Lake

Pool Elevations – Spill, Target, Minimum (All elevations are NGVD 29 unless otherwise specified)

	Baseline			Alternative	
Date	Maximum/Full Pool Elevation (ft)	Minimum Elevation (ft)	Baseline Model Elevation (ft)	Maximum/Full Pool Elevation (ft)	Minimum Elevation (ft)
January 1	1,071.10	1,049.00	1,066.00		
February 1	1,071.10	1,049.00	1,066.00		
March 1	1,071.10	1,049.00	1,049.00		
April 1	1,071.10	1,049.00	1,053.00		
April 15	1,071.10	1,049.00	1,059.07		
May 1	1,071.10	1,049.00	1,066.00		
June 1	1,071.10	1,049.00	1,067.00		
July 1	1,071.10	1,049.00	1,066.00		
August 1	1,071.10	1,049.00	1,062.00		
September 1	1,071.10	1,049.00	1,061.50		
September 30	1,071.10	1,049.00	1,061.02		
October 1	1,071.10	1,049.00	1,061.00		
November 1	1,071.10	1,049.00	1,066.00		
December 1	1,071.10	1,049.00	1,066.00		
December 31	1,071.10	1,049.00	1,066.00		



Minimum Flows

Current: 10 cfs from dam into Black Lake Creek

Alternative: _____

Lake Level Stabilization

Current: None

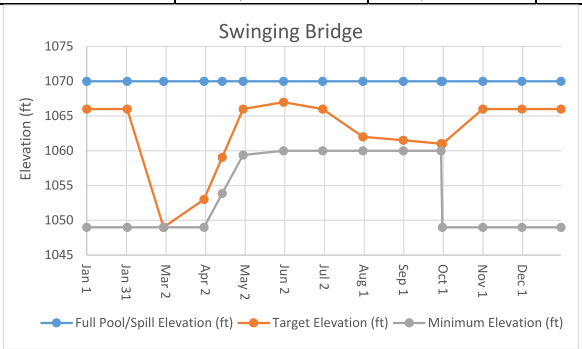
Alternative: _____

Other

Swinging Bridge

Pool Elevations – Spill, Target, Minimum (All elevations are NGVD 29 unless otherwise specified)

	Baseline				Alternative		
Date	Maximum/Full Pool Elevation (ft)	Minimum Elevation (ft)	Recreation Guideline Elevation (ft)	Baseline Model Elevation (ft)	Maximum/Full Pool Elevation (ft)	Minimum Elevation (ft)	Recreation Guideline Elevation (ft)
January 1	1,070.00	1,049.00		1,066.00	1068	1052	
February 1	1,070.00	1,049.00		1,066.00	1068	1052	
March 1	1,070.00	1,049.00		1,049.00	1068	1052	
April 1	1,070.00	1,049.00		1,053.00	1068	1052	
April 15	1,070.00	1,053.85		1,059.07	1068	1052	
May 1	1,070.00	1,059.40		1,066.00	1068	1052	
June 1	1,070.00	1,060.00	1063.00	1,067.00	1068	1065/1064	
July 1	1,070.00	1,060.00	1062.50	1,066.00	1068	1064	
August 1	1,070.00	1,060.00	1062.00	1,062.00	1068	1064	
September 1	1,070.00	1,060.00	1061.50	1,061.50	1068	1064	
September 30	1,070.00	1,060.00	1061.00	1,061.02	1068	1064	
October 1	1,070.00	1,049.00		1,061.00	1068	1062/1052	
November 1	1,070.00	1,049.00		1,066.00	1068	1052	
December 1	1,070.00	1,049.00		1,066.00	1068	1052	
December 31	1,070.00	1,049.00		1,066.00	1068	1052	



Minimum Flows

Current: 100 cfs (Baseline 1) or inflow (NLT 60 cfs) (Baseline 2) below dam into Mongaup River

Alternative: Baseline 2 minimum flow

Lake Level Stabilization

Current: None

Alternative: see below

Other

The HOOT and SBPOA preferred scenario for recreation season (Memorial Day to Sept. 30) is an average elevation of 1218 feet for Toronto and 1064 feet for Swinging Bridge. Memorial Day-only minimum is 1220 at Toronto and 1065 at Swinging Bridge.

Acceptable deviations from the mean are +/- 2 feet for Toronto and +1 foot/-2 feet for Swinging Bridge.

The minimum elevation schedule presented here is meant to approximate this outcome under CHEOPS logic.

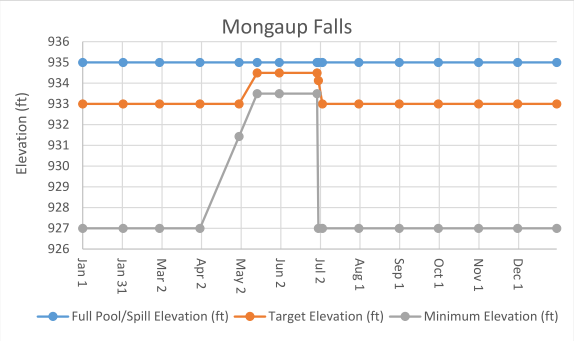
If a "look back" function is available to update daily minimums within model runs and thus achieve the two averages this would be an alternative way to model this scenario.

October minimum elevation through Oct. 15 is 1214 at Toronto and 1062 at Swinging Bridge, for boat removal; post-Oct. 15 min is 1205 at Toronto and 1052 at Swinging Bridge.

Mongaup Falls

Pool Elevations – Spill, Target, Minimum (All elevations are NGVD 29 unless otherwise specified)

	Baseline			Alternative	
Date	Maximum/Full Pool Elevation (ft)	Minimum Elevation (ft)	Baseline Model Elevation (ft)	Maximum/Full Pool Elevation (ft)	Minimum Elevation (ft)
January 1	935.00	927.00	933.00		
February 1	935.00	927.00	933.00		
March 1	935.00	927.00	933.00		
April 1	935.00	927.00	933.00		
May 1	935.00	931.43	933.00		
May 15	935.00	933.50	934.50		
June 1	935.00	933.50	934.50		
June 30	935.00	933.50	934.50		
July 1	935.00	927.00	934.13		
July 4	935.00	927.00	933.00		
August 1	935.00	927.00	933.00		
September 1	935.00	927.00	933.00		
October 1	935.00	927.00	933.00		
November 1	935.00	927.00	933.00		
December 1	935.00	927.00	933.00		
December 31	935.00	927.00	933.00		



Minimum Flows

Current: 70 cfs (Baseline 1) or inflow (NLT 60 cfs) (Baseline 2) into bypassed reach plus 20 cfs leakage though powerhouse into Mongaup River

Alternative: _____

Lake Level Stabilization

Current: Hold pool elevation within ±1 foot of starting elevation from May 15 to June 30

Alternative: _____

Ramping Rate

Current: 2 units/hour up/down

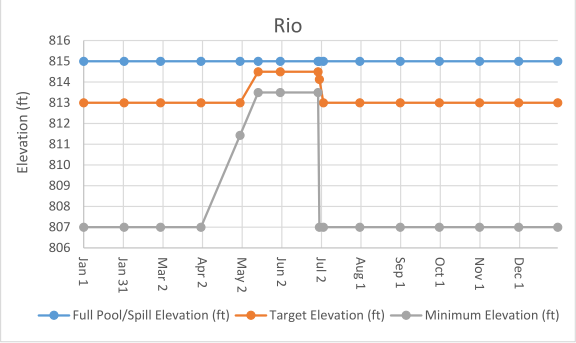
Alternative: _____

Other

Rio

Pool Elevations – Spill, Target, Minimum (All elevations are NGVD 29 unless otherwise specified)

	Baseline			Alternative	
Date	Maximum/Full Pool Elevation (ft)	Minimum Elevation (ft)	Baseline Model Elevation (ft)	Maximum/Full Pool Elevation (ft)	Minimum Elevation (ft)
January 1	815.00	807.00	813.00		
February 1	815.00	807.00	813.00		
March 1	815.00	807.00	813.00		
April 1	815.00	807.00	813.00		
May 1	815.00	811.43	813.00		
May 15	815.00	813.50	814.50		
June 1	815.00	813.50	814.50		
June 30	815.00	813.50	814.50		
July 1	815.00	807.00	814.13		
July 4	815.00	807.00	813.00		
August 1	815.00	807.00	813.00		
September 1	815.00	807.00	813.00		
October 1	815.00	807.00	813.00		
November 1	815.00	807.00	813.00		
December 1	815.00	807.00	813.00		
December 31	815.00	807.00	813.00		



Recreation Flows

	Dates	Flow (cfs) released from Development	Remarks	Start Hour	End Hour
Current	April 15 to Oct 31; alternating Saturdays and Sundays every other week.	435 (per unit)	Provide a one-unit (435 cfs) or two-unit (870 cfs) release from the Main Powerhouse on alternating weekend days every other weekend between April 15 and October 31.	1100	1500
Alternative					

Rio (cont.)

Minimum Flows

Current: 100 cfs (Baseline 1) or inflow (NLT 60 cfs) (Baseline 2) into bypassed reach

Alternative: _____

Lake Level Stabilization

Current: Hold pool elevation within ±1 foot of starting elevation from May 15 to June 30

Alternative: _____

Ramping Rate

Current: 1 unit/hour up/down (Main Powerhouse)

Alternative: _____

Other

The maximum hydraulic capacities of the units and discharge valves at each project are as follows:

Development	Structure	Hydraulic Capacity (cfs)	Discharge Location
Toronto	Discharge Tunnel	620[1]	Into Black Lake Creek at dam
Cliff Lake	Discharge Tunnel	430[1]	Into Black Lake Creek at dam
Swinging Bridge	Unit 2	1,015	Into Mongaup River at toe of non-overflow dam
	Unit 3 (under construction)	60 – 125	
	Minimum Flow Discharge Valve	up to 150[1]	
Mongaup Falls	Units 1, 2, 3, 4	155 (each)	Into Mongaup River at powerhouse
	Minimum Flow Discharge Valve	up to 475[2]	Into bypassed reach at dam
Rio	Units 1, 2	435 (each)	Into lower Mongaup River at Main Powerhouse
	Unit 3	60 - 120	Into bypassed reach at dam
	Minimum Flow Discharge Valve	up to 160[1]	Into bypassed reach just downstream of dam

[1]The listed maximum flow is contingent upon maximum head conditions (i.e., full pool). If full pool conditions are not available, the maximum flow will be reduced.
[2]A maximum flow of 475 cfs from the minimum flow valve is considered a theoretical maximum (i.e., has not been field tested) and may not be achievable due to structural concerns. Further engineering analysis would be necessary to confirm this flow. A flow of 70 cfs is normally provided by the minimum flow valve.

October 4, 2019

Mr. Michael Scarzello
Eagle Creek Renewable Energy, LLC
P.O. Box 167
Neshkoro, WI 54960-0167

RE: Rio Hydroelectric Project (FERC No. P-9690-112)
Mongaup Falls Hydroelectric Project (FERC No. P-I0481-067)
Swinging Bridge Hydroelectric Project (FERC No. P-I0482-117)
Operation Model Scenario Recommendations

Dear Mr. Scarzello,

The New York State Department of Environmental Conservation (NYSDEC) is in agreement with the scenarios presented by the U.S. Fish and Wildlife Service (USFWS) for the Operations Model develop pursuant to the February 2, 2018, Study Plan Determination by the Federal Energy Regulation Commission (FERC) and as requested by Eagle Creek Hydro (Applicant) in their September 12, 2019, electronic correspondence for the Rio (FERC No. 9690-112), Mongaup Falls (FERC No. 10481-067), and Swinging Bridge (FERC No. 10482-117)Hydroelectric Projects. The three projects, collectively known as the Mongaup River Hydroelectric Projects (Projects), are located on the Mongaup River in Sullivan and Orange Counties, New York.

In lieu of making additional modeling requests that would mirror those presented by the USFWS, NYSDEC is expressing agreement and support for those scenarios requested by the USFWS. Of special interest to NYSDEC are the scenarios for minimum flow releases due to concerns regarding adequate water temperature necessary for *Salmonid spp.* to habituate and thrive in the tailwaters of the Projects. An increase in flows from the Projects are the most effective means to improve water quality conditions, particularly in regard to maintaining the required water temperatures for the Mongaup River and its trout population. The flows suggested in the USFWs requested scenarios will allow for an evaluation of water budgeting from the current baseline model containing the presently required minimum flows and a range of potentially suitable flows derived from those observed during the 2018 field season.

NYSDEC appreciates having involvement and being given the opportunity to provide requests and scenarios for consideration in the Operations Model for the Projects. A follow-up version of this may be filed with FERC at a later date.

Respectfully,
N.E. Cain