UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Alabama Power Company	)	
Martin Dam Project	)	P-349

COMMENTS ON PROPOSED STUDY PLANS
FOR THE MARTIN DAM PROJECT
BY AMERICAN RIVERS AND ALABAMA RIVERS ALLIANCE

1 Introduction

On November 17, 2008, APC submitted its Proposed Study Plan for the relicensing of the Martin Dam Project. Pursuant to 18 CFR § 5.12, Alabama Rivers Alliance and American Rivers respectfully submit these comments on APC's proposed study plan.

Additionally, on November 14, 2008, The Federal Energy Regulatory Commission (FERC or Commission) issued a Scoping Document (SD2) pursuant to the National Environmental Policy Act (NEPA) for the relicensing of Alabama Power Company's (APC) Martin Dam Project. Since the ongoing study process is intended to address resource issues that were identified in FERC's SD1 and SD2 documents for analysis in the environmental document for this relicensing, we will refer to SD2 throughout these comments. We also incorporate by reference our October 11, 2008 study requests and comments on APC's PAD and FERC's SD1 (*see* FERC Accession #20081014-5010).

The Alabama Rivers Alliance (ARA) is a nonprofit conservation organization dedicated to the protection and restoration of waters in the state of Alabama. We are headquartered at 2027 Second Avenue North, Suite A, Birmingham, Alabama 35203. Alabama Rivers Alliance's mission is to unite the citizens of Alabama to protect clean, healthy waters. We represent more than 800 individuals and 60 grassroots groups.

American Rivers (AR) is a non-profit corporation whose headquarters are located at 1101 14th St. NW, Washington, DC 20005. Our Southeastern Regional Office is

headquartered at 2231 Devine Street Suite 202, Columbia, SC 29205. AR is a national organization that stands up for healthy rivers so our communities can thrive. We believe that rivers are vital to our health, safety and quality of life. American Rivers mobilizes an extensive network of more than 65,000 members and activists located in every state across the county.

Both organizations are participating in the relicensing of the Martin Dam project. We are also parties to the FERC relicensings of APC's Black Warrior River Project (P-2165) and Coosa River Project (P-2146). We intend to continue to participate fully in this process and file a Motion to Intervene after APC files its license application.

2 General Comments

While we sincerely appreciate the work and stakeholder outreach that went into the preparation of APC's Proposed Study Plan, we remain concerned that APC's Study Plan, like its PAD, lacks a number of critical details that are likely to determine the success of the resulting studies and the availability of information that will be necessary for a full and complete environmental analysis of APC's license application.

2.1 Geographic Scope and Project Nexus

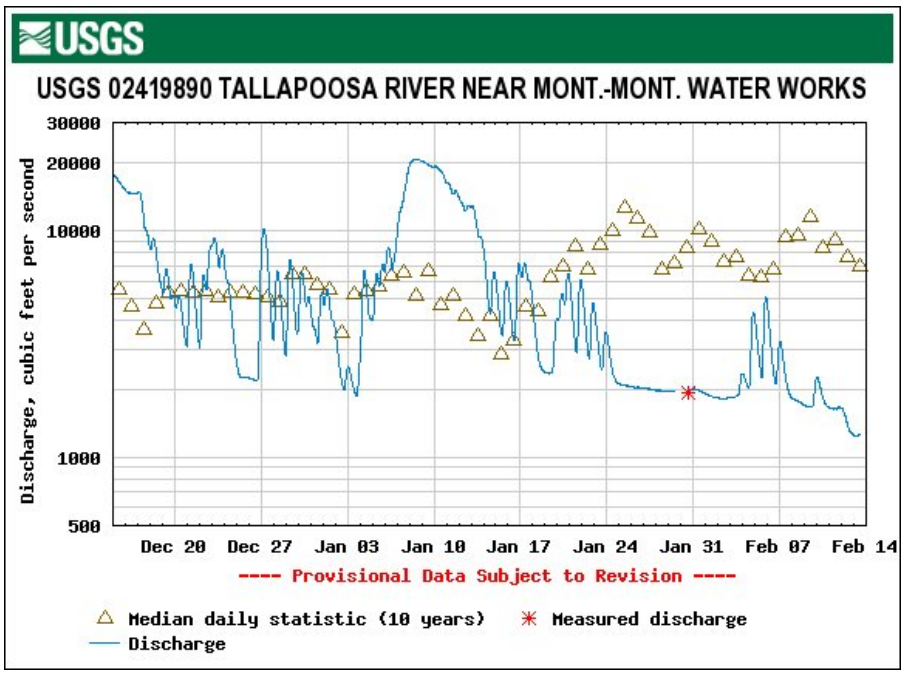
In FERC's "Study Requests, Comments on Preliminary Study Plan, and Requests for Additional Information," dated October 3, 2008, the Commission requested that APC "identify where the downstream effects of project operations terminate in the Tallapoosa River," including "the amount of water fluctuations (in feet) at that downstream site, the daily frequency or occurrence of the fluctuation, and any known or potential effects" on resources downstream of the project. APC's November 17, 2008 response reads as follows:

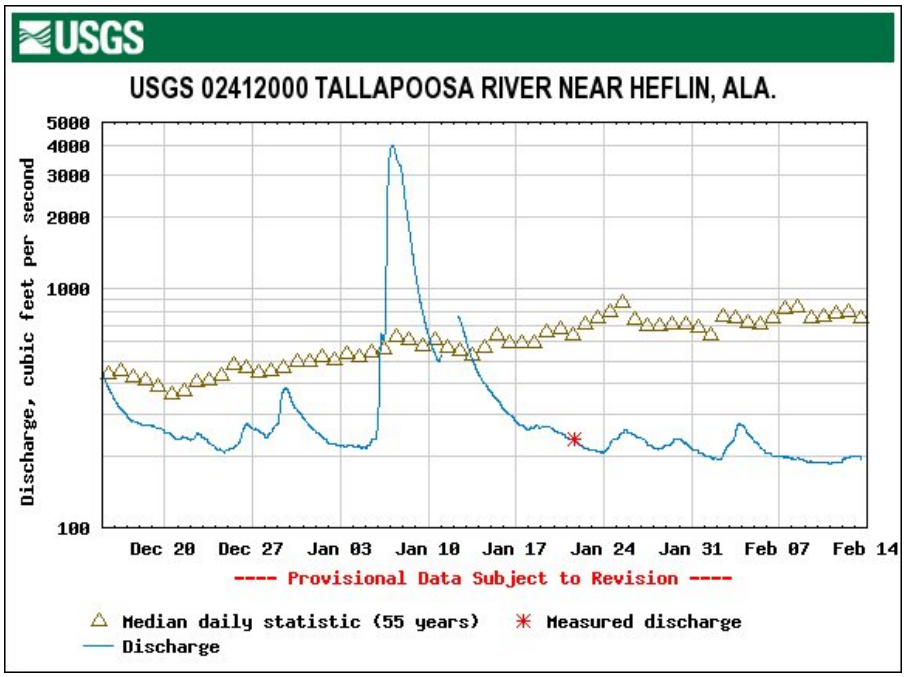
> "The Martin Project tailrace is coincident with the lake formed by the downstream Yates dam. Releases from Martin become reregulated to some extent by the releases from Yates. The two dams (Martin and Yates) are located relatively close, only 7.9 river miles apart. Partly due to this close proximity and the relative difference in reservoir storage amounts, the dams normally operate in tandem. Inflow conditions at each reservoir along with system generation needs can produce fluctuations in Yates that vary on average from zero to about 2 feet. Alabama Power has developed

> seven study plans to look at the effects of the change in operations at Martin on the resources identified above by FERC and those effects on the above listed resources for both the baseline condition and any proposed operational changes will be presented in the Preliminary Licensing Proposal and Final License Application."

This does not answer the question; APC does not identify the downstream terminus of project effects. Unfortunately, the Proposed Study Plan does not offer additional clarity as to the geographic scope of most of the individual studies. The geographic scope of many of APC's proposed studies disregards the significant effects of releases from Martin on the riverine stretches of the Tallapoosa downstream of Yates and Thurlow dams.

Given the absence of a clear geographic scope for these studies in its study plan, we recommend that FERC's study plan determination provide this clarity by requiring that the geographic scope for all aquatic resources affected by current and proposed project operations at Martin be extended downstream to the mouth of the Tallapoosa River. This request is supported by clear evidence that the Martin project significantly affects flows as far downstream as the lowest gauge on the Tallapoosa at Montgomery, AL, which is located at mile 14 on the Tallapoosa River. Compare, for example, the following 60-day record of real-time flows at the Montgomery gauge, which shows daily flow fluctuations of between 2,000 and 3,000 cfs, with the Helfin and Newell gauges located on unregulated reaches of the Tallapoosa and Little Tallapoosa Rivers above APC's R.L. Harris project. There is no other significant source of inflow into the Tallapoosa River between Martin Dam and the Montgomery gauge, and APC has conceded both in this proceeding and in the relicensing of the Yates and Thurlow project that APC's other projects below Martin do not have the storage capacity or operational flexibility to cause these flow fluctuations. In other words, flows in the Tallapoosa below Thurlow are direct – not cumulative – impacts of Martin project operations and must be evaluated as such.


USGS
USGS 02419890 TALLAPOOSA RIVER NEAR MONT.-MONT. WATER WORKS
Discharge, cubic feet per second
30000
20000
10000
1000
500
Dec 20
Dec 27
Jan 03
Jan 10
Jan 17
Jan 24
Jan 31
Feb 07
Feb 14
---- Provisional Data Subject to Revision ----
Median daily statistic (10 years)
Measured discharge
Discharge


USGS
USGS 02412000 TALLAPOOSA RIVER NEAR HEFLIN, ALA.
Discharge, cubic feet per second
5000
4000
3000
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Dec 20
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Jan 03
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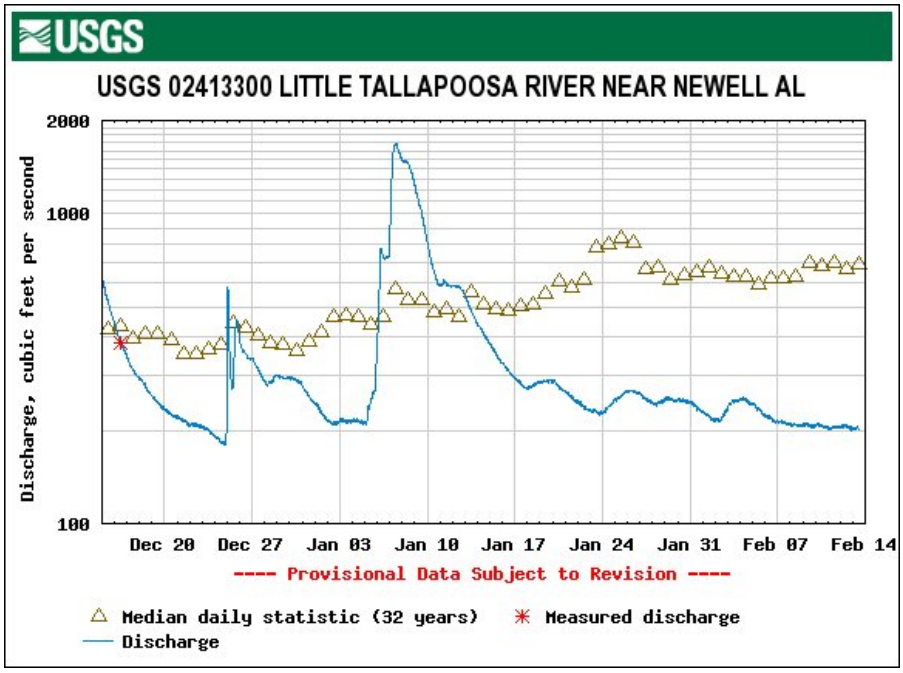
---- Provisional Data Subject to Revision ----
Median daily statistic (55 years)
Measured discharge
Discharge



We also recommend that the cumulative impacts analysis of the project include APC's operations on the Coosa River and the impacts of both hydropower systems on the Alabama River below the confluence of the Coosa and Tallapoosa Rivers.

2.2 Alternatives

In our comments on FERC's SD1, we requested that FERC's analysis of alternatives include two operational alternatives in addition to the three identified in the Scoping Document: Run-of-River, and Run-of-River modified to allow for flood control. In its SD2, FERC dismissed our Run-of-River alternative as unreasonable because it would "eliminate all flood control benefits provided by the project." FERC did not respond to our other request, and did not provide any evidence to support the unstated assumption that the project provides significant flood control benefits and that minimizing those benefits would be "unreasonable." We strongly disagree with this assessment. Section 4(e) of the Federal Power Act requires that FERC give equal consideration to all of these values (among others) when making a decision to issue a license for the project. By analyzing alternatives in this manner, FERC can provide stakeholders with a better understanding of how it assigns value to each of these competing values and how it arrives at an appropriate balance among them. We therefore

clarify and expand our request for alternatives analysis here. We recommend that FERC analyze each of the following alternatives for the operation of the Martin Dam project. For its analysis of each alternative, FERC should maximize individual benefits while minimizing others to the extent that it can reasonably do so:

- Project operations that maximize power production benefits.
- Project operations that maximize the reservoir's ability to control floods.
- Project operations that maximize the stability of lake levels.
- Project operations that maximize ecological benefits in the Tallapoosa River by most closely mimicking the natural hydrograph of the Tallapoosa River.

3 Flows and modeling of Project Operations (Study Plan 12(a))

Goals, Objectives, and Relevant Resource Management Goals.

The discussion of alternatives to the proposed action is the "heart" of the environmental document. 40 C.F.R. § 1502.14; *see also* 42 U.S.C. § 4332(c)(iii). The environmental document should present the environmental impacts of the proposal and the alternatives in comparative form, thus sharply defining the issues and providing a clear basis for choice among option by the decision-maker and the public." *Id.*

The modeling of project operations is therefore at the heart of any hydropower licensing proceeding. The purpose of modeling is to take various alternative operating scenarios that are informed by the objectives of the applicant, resource agencies, and other stakeholders, and provide reliable information about how those alternative operating scenarios will affect the performance of the hydropower system. When modeling of project operations is done properly, it provides invaluable information about the tradeoffs associated with attaining various stakeholder objectives.

APC's proposed Study Plan 12(a) proposes to model the operations of the Martin project in order to "determine the feasibility of revising the Martin rule curve and operating guidelines" in order to "investigate the feasibility of raising the winter rule curve at Martin" at the request of stakeholders. While we support the modeling of this proposed change, we are concerned that the Proposed Study plan does not respond to the

requests of other stakeholders that APC also use this model to review other alternative operating scenarios, including flow schedules that will maximize benefits to aquatic resources in the project-affected reach of the Tallapoosa below Thurlow Dam.

Section 4(e) of the Federal Power Act requires FERC to give equal consideration to "the protection, mitigation of damage to, and enhancement of, fish and wildlife (including related spawning grounds and habitat), the protection of recreational opportunities, and the preservation of other aspects of environmental quality." 16 USC § 797(e). All of these resources are sensitive to changes in flows, and existing USGS gauge data demonstrates clearly that the Martin Dam Project has a significant effect on flows in the Tallapoosa River. Unless the goals of this study are expanded to consider other operational scenarios, FERC will lack the information that it needs to reliably determine the impact of proposed operational scenarios on these resources, quantify the tradeoffs involved with different operating scenarios, and recommend operations that balance these resources with other project purposes.

We therefore propose modifications to Study plan 12(a) that will expand the goal of this study without significantly expanding its cost. The modeling of project operations should result in a clear explanation to stakeholders of how the existing guide curve and *all* proposed modifications to that curve (not just APC's proposed modification, but other proposals designed to achieve other stakeholder objectives) will affect APC's operations and other project-affect resources. The model should be able to accurately describe how downstream releases for ecological purposes will impact project operations. The model should be able to help stakeholders develop a more comprehensive protocol for managing drought so that APC will be able to "live within its means" with its new license and not have to seek variances and temporary license amendments during dry years. In short, APC's model should permit stakeholders to understand the interrelationship between proposed operational scenarios and project-affected resources, and should provide FERC staff with the information that they need to optimize the guide curve to provide an appropriate balance of project objectives.

Existing Information

In its proposed study plan, APC fails to identify the data sources of hydrologic data (stream gauges, operational data, etc.) that will be used in developing its hydrologic model. Because APC is proposing to use several different modeling tools, the study must be designed and calibrated so that the same data sources are used for each model so that the results are consistent across the models. We strongly recommend that the model be run for as long a period of record as can be developed Only by analyzing the system over a wide range of hydrologic input can the dynamics of the system be completely understood.

Study Area and Study Sites

APC's proposed model includes the waters within the Martin Project Boundary, the tailrace of the project, flows downstream in the Yates and Thurlow Project and the Tallapoosa River below Thurlow dam, and the upstream R.L. Harris project (which, since it will need to seek a new operating license during any new license term for the R.L. Harris project, must be considered here). We recommend that APC's model take a comprehensive look at the entire Tallapoosa Basin, including R.L. Harris, , withdrawals from each of APC's reservoirs, the interrelationship of the operations of the R.L Harris, Martin, and Yates and Thurlow projects, and Martin-controlled flows extending to the mouth of the Tallapoosa River. Since much of the underlying hydrologic data is publicly available or already available to APC, and since APC's study already covers this geographic scope, we do not anticipate that a comprehensive model of the basin will add significantly to the costs of this study.

Methodology

While we appreciate the savings that Alabama Power may realize from its use of proprietary, in-house modeling tools, our experience with APC's modeling efforts of the Black Warrior and Coosa hydropower projects has left us with serious concerns about the results produced by these "black box" tools that have not been extensively peer-reviewed. If FERC intends to rely on APC's model, the model must be open, transparent, and allow other stakeholders to independently verify its assumptions. While we appreciate APC's

willingness to hold a technical conference to explain its modeling methodology and offer to present its proposed methodology to "an independent expert for review and comment," we do not feel that these steps alone are sufficient to ensure the credibility of the methodology. We strongly recommend an open, transparent process in which stakeholders have access to the models (without any proprietary information such as generation revenue) and the modelers in order to test assumptions and understand various operational scenarios. In the alternative, we recommend that APC consult with stakeholders to select a panel of independent experts (rather than a single expert) to evaluate its proposed methodology and the results of each model run. We recommend that the results of this review and any subsequent modifications to the proposed methodology be made public.

APC's proposal to simulate operations for "typical normal flow and low flow events" is inadequate to capture the full range of variability that is likely to occur over the life of its new license; indeed, the drought-related operational variances that APC has received during each of the past several years demonstrate that any new license must consider a much wider range of potential hydrologic scenarios than are found in APC's current license. We strongly recommend that APC use the Corps' and/or the USGS' long-term record rather than the "typical years" that it is proposing to evaluate. River systems behave differently in different types of droughts (early onset, late onset, long-duration and short-duration). APC's operational model must consider a long-term record of at least 50 years to adequately summarize effects of alternative operations. In the eastern United States, it is usually possible to develop a record that goes back to at least 1930, which is critical since in some regions the drought of the early 1930s was more severe than the droughts of 2002 and 2007.

The model must also allow stakeholders to better understand how often reservoir elevations will reach certain thresholds, how the project will be operated under various types of conditions, and when and how often low- and high-flow protocols will be invoked. Based on APC's responses to several questions raised at its February 2009 modeling workshop, we have additional concerns about its modeling study plan. First, it appears that there is a great deal of operational flexibility within APC's existing

operating zones. APC does appear to adhere to a curve for flood control operations (which it refers to as the "existing curve"). It also claims to follow a "drought curve" during low-flow periods, although the criteria that define this drought curve have not been defined or explained. Additionally, APC has consistently received drought-related variances over the past several years that allow it to alter operations; it is unclear if APC's drought curve refers to actual license conditions, the conditions of drought-related variances, or something else entirely.

Between those two extremes, it appears that APC attempts to follow a loose "power curve," which presumably encompasses APC's own operating guidelines. However, there are no clear guidelines (not is there a clear explanation) for how APC operates the Martin project when reservoir levels fall below this "power curve." We understand that APC notifies FERC at these levels and that it adjusts its operations to take into account existing requirements for ecological flows, navigation, and downstream water withdrawals, but the specific operational guidelines are unclear. APC's model must clearly explain the operational criteria used when elevations fall below its "power curve," both under its current license and under any proposed alternatives analyzed during relicensing, since those criteria will dictate operations for a significant percentage of the time during the life of any new license.

We also understand that APC is considering developing a drought plan separate from this relicensing. Given the number of operational variances that APC has sought at (and received from) FERC over the past several years, it is clear that low-flow operations at the Martin project are a critical issue, and it is inconceivable that FERC could issue a new license that is "best adapted to a comprehensive plan for improving or developing a waterway" without full consideration of drought issues. APC should develop a drought plan contemporaneously with relicensing, and the drought plan should be reflected in APC's new license for the project. Alternatively, FERC should reserve a specific provision to automatically reopen and amend the license at such time as any separate drought plan is implemented.

We also understand that the U.S. Army Corps of Engineers is currently revising its Water Control Manual for the ACT basin. We request that APC revise its study to explain how it will coordinate its modeling of the basin with the Corps' ongoing effort. To the extent that the Corps' revision may result in changed flow requirements below the Martin project, we recommend that FERC reserve a specific provision to reopen and amend any new license for the Martin project to incorporate those changes if necessary.

Products

While the "single table using a matrix format" result may assist parties in making sense of a great deal of complex information, it is insufficient by itself. APC should modify its study to provide stakeholders with additional output in two forms: (1) Time series of reservoir elevations and flows at points of interest for the entire period of record, and (2) summary statistics of the elevation and flow data, e.g. stage duration curves (by year, season, and month), flow duration curves (by year, season, and month), 7Q10, and number of days flows are above and below certain threshold values (by year, season, and month). To the extent that stakeholders' performance measures can be calculated from these data, those measures (e.g. hydropower generation and revenue, habitat indices, days in recreation season where the experience is degraded or unusable, etc.) should also be presented. This output should be made available in machine-readable format (Microsoft Excel or delimited text). Again, we strongly recommend an open process in which stakeholders have access to both models and modelers.

4 Migratory Fish and (Study 1)

Goals and Objectives of Study

While we are supportive of the goal of this study, we are concerned that it does not address the full range of project impacts on migratory fish and on other species whose own lifecycles depend on migratory fish. The Martin project regulates the allocation, timing, levels and distribution of flows downstream in the Tallapoosa River below Thurlow Dam. We recommend that this study be expanded to assess the impacts of flow alterations at the project, including the effects of any proposed license conditions and the cumulative flow-related impacts associated with the project's operations under its current

license. It may be appropriate to separate these goals from this study and fold them into Study 3 to create a more comprehensive study on the effects of project releases on aquatic resources, analyzing flow impacts on migratory and non-migratory species alike. If Study 3 were modified in this fashion, Study 1 could be modified to focus solely on fish passage issues.

Project Nexus

Please see section 2.1 above.

Geographic Scope

We believe that the general geographic scope that APC has identified is adequate, although it would be helpful if APC provided additional specificity.

Methodology

In general, we feel that the first six steps that APC has identified as its proposed methodology are a good start. However, APC should clarify how it intends to analyze the extent to which each species is affected by current project operations and how it is likely to be affected by the operational alternatives proposed in its license application.

Step #7 in APC's proposed methodology is, however, inadequate. Because of releases from Martin dam, flows in the Tallapoosa river below Thurlow dam fluctuate both daily (reversal flows of several feet during daily peaking operations), and seasonally (flows below Thurlow deviate significantly from the natural hydrograph). It is not sufficient to simply "discuss how releases from Martin may potentially affect migratory fish below the Thurlow development." Rather, APC must perform a multi-level study that properly analyzes, using accepted methods, the extend of the effects of proposed operations (and the cumulative effects of current and past operations) on migratory species. For each proposed alternative operating scenario, APC's study should consider the effects of flows on habitat, physical barriers to migration, migration cues, water quality impacts to migration, and effects on mussel species that rely on migrating fish as part of their own life cycle.

If the literature review performed in the initial steps of this study identifies the presence of migratory species that may be affected by flows that result from APC's proposed and current operations, APC must then perform a controlled field study that can determine the effects of proposed operating scenarios on migratory fish species and study how alternative operating scenarios could protect, mitigate project impacts, or enhance migratory species species.

We recommend that the fish passage concept document be expanded to include the input of a broad range of stakeholders (agency staff, academics, NGOs, etc.) with technical expertise. The concept document must include specific biological objectives for each target species, and should consider the effects of proposed operations (and alternatives) on these objectives, potential measures to mitigate these impacts, and measures that may enhance conditions for these species.

5 Project flows and aquatic resources (Study 3)

Goals and Objectives of Study

We recommend that the goals of this study be expanded to consider the full range of project-related flow impacts downstream of Martin Dam. Because of releases from Martin dam, flows in the Martin Tailrace and in the Tallapoosa river below Thurlow dam fluctuate both daily (reversal flows of several feet during daily peaking operations), and seasonally (flows below Thurlow deviate significantly from the natural hydrograph). This study should consider the effects of peak and minimum flow levels, the effects of rising and falling river stages – and the timing of these stages – associated with peaking operations, the relationship between flows and water quality, and other flow-related impacts on aquatic species in the Tallapoosa River below the project and below Thurlow dam.

We also recommend that this study be tightly integrated with Study 12(a) so that APC can take a comprehensive look at flow management throughout the Tallapoosa River Basin.

Background and Existing Information

In this section, APC states that "Water quality, fisheries, and RTE information for the Tallapoosa River downstream of Thurlow Dam is available from a series of studies that APC has performed over the past 16 years." These studies are not listed in the references section for the study plan. We request that APC provide a list of these studies, make copies of them available to the public, and submit copies to the record for this relicensing.

Project Nexus

Please see section 2.1 above.

Geographic Scope

In section 5.3.2, page 5-49 of the PAD, APC conceded that there are potential cumulative impacts of project operations of the Martin Dam Project. This is due to the fact that the Martin project regulates the allocation, timing, levels and distribution of flows downstream in the Tallapoosa River. The geographic scope of this study must consider the direct impacts of the Martin Dam as far downstream as the Tallapoosa River downstream to its confluence with the Coosa River. It should also consider the cumulative impacts associated with releases from its projects on the Tallapoosa and Coosa Rivers on flows in the Alabama River.

Methodology

The proposed "limited field studies" are inadequate. APC's own description of the geographic scope of the study includes the "Tallapoosa river downstream of Thurlow Dam," yet the proposed field surveys are limited to the Martin Dam tailrace. This section should be expanded to allow for field surveys and sampling in project-affected reaches in the Tallapoosa River to address project impacts on effected species and how proposed modifications to project operations may affect those species.

6 Rare, Threatened, and Endangered Species (Studies 5 and 12(e))

Geographic Scope

In section 5.3.2, page 5-49 of the PAD, APC conceded that there are potential cumulative impacts of project operations on RTE species. This is due to the fact that the Martin project regulates the allocation, timing, levels and distribution of flows downstream in the Tallapoosa River. Given that existing and proposed operations of the Martin project have clear and significant direct impacts on the Tallapoosa River below Thurlow dam as well as within the project boundary, it is unclear why APC has chosen to segment these effects into two study plans. We recommend that APC combine studies 5 and 12(e) into a single comprehensive Rare, Threatened, and Endangered Species Study Plan.

The lower Tallapoosa is home to a number of federal protected species, including several species of mussels, including the Threatened Finelined Pocketbook, the Endangered Ovate Clubshell, and the Endangered Southern Clubshell. The Tallapoosa River from U.S. Highway 431 upstream to the confluence of McClendon and Mud Creeks, and Cane Creek from its confluence with the Tallapoosa River upstream to Sec. 4 Northern line (T.15 S., R. 11 E.) is listed as Critical Habitat for the threatened Finelined Pocketbook (Lampsilis Altillis). APC's study plan should consider all potential impacts resulting from proposed operations and alternatives to those operations

In study plan 12(e), APC proposes to consider "the effects of increased flooding [associated with a proposed change to the rule curve] in the Tallapoosa River downstream of the Thurlow Project." We support this proposal, although it is insufficient by itself. Instead, APC should consider the effects of *all* proposed operational alternatives on Rare, Threatened, and Endangered Species below Thurlow Dam. APC's study plan should consider not only "increased flooding," but also the effects of seasonal and daily flow variations (including low flows, high flows, and flow reversals caused by peaking operations at Martin, etc.) under all proposed operational scenarios.

Project Nexus

Please see section 2.1 above.

Methodology

Study plan 12(e) contains no provision for field surveys. We recommend – at a minimum – that method proposed in Study Plan 12(e) be expanded to include the field study components described in Study Plan 5. We also recommend that APC re-evaluate its suggestion to spend no more than 10-20 minutes at most survey sites. RTE species are, by nature, rare; cursory field surveys are not necessarily sufficient for detecting the presence of such species.

7 Erosion and Sedimentation Study Plans 10 and 12(d)

Geographic Scope

In section 5.3.2, page 5-49 of the PAD, APC conceded that there are potential cumulative impacts of project operations on water quality as a result of erosion and sedimentation. This is due to the fact that the Martin project regulates the allocation, timing, levels and distribution of flows downstream in the Tallapoosa River. Given that existing and proposed operations of the Martin project have clear and significant direct impacts on the Tallapoosa River below Thurlow dam as well as within the project boundary, it is unclear why APC has chosen to segment these effects into two study plans. We recommend that APC combine studies 10 and 12(d) into a single comprehensive Erosion and Sedimentation Study Plan.

In Study Plan 10 (Erosion and Sedimentation), APC has limited the geographic scope of its study to stakeholder-identified erosion “hotspot sites” and sedimentation accumulation areas within Lake Martin and the immediate tailrace downstream. In addition to studying stakeholder identified hotspots, APC must also survey the entire reservoir for erosion “hotspots.” In addition, due to the clear and direct effect the Martin Project has on the Tallapoosa River downstream of Thurlow Dam, APC must consider the entire Tallapoosa River to the confluence with the Coosa River in the erosion and sedimentation study.

Project Nexus

Please see section 2.1 above.

Methodology

In addition to studying stakeholder identified erosion hotspots within Lake Martin and the Martin Tailrace, APC must also survey the entire reservoir and the Tallapoosa River downstream of the Thurlow Dam to the confluence with the Coosa River for "hotspots" because of the probable impact Martin Project operations has on downstream erosion. Current and proposed Martin Project operations frequent up and down-ramping along the Tallapoosa River may exacerbate natural erosion processes, increasing erosion and possibly contributing to turbidity. Sedimentation including accumulation and downstream transport should be included in this study plan. A change in the rule curve could have an effect on downstream sediment transport and channel condition.

We recommend that APC conduct a coarse level analysis of channel morphology in the Tallapoosa River to examine historical changes and identify locations for intensive study. APC should utilize historical and aerial photographs, digital elevation models, digital orthophotography, and previous studies on channel geomorphology. This study will involve an assessment of channel confinement, channel slope, channel sinuosity, sediment source area, presence of alluvial sediment, potential hillslope sediment source areas, and distribution of side channels. The general locations of intensive study sites are designed to characterize reaches potentially affected by Martin Project operations and to identify key geomorphic areas responsible for significant sediment supply and transport. Within the general reach locations, intensive study sites are typically located in response reaches most likely to exhibit effects from hydrology, sediment supply, or large woody debris loading.

8 Water Quality (Study Plans 8 and 12 (c))

Geographic Scope

In section 5.3.2, page 5-49 of the PAD, APC conceded that there are potential cumulative impacts of project operations of the Martin Dam Project. This is due to the fact that the Martin project regulates the allocation, timing, levels and distribution of flows downstream in the Tallapoosa River. Given that existing and proposed operations of the Martin project have clear and significant direct impacts on the Tallapoosa River

below Thurlow dam as well as within the project boundary, it is unclear why APC has chosen to segment these effects into two study plans. We recommend that APC combine studies 10 and 12(d) into a single comprehensive Water Quality Study Plan.

APC's PAD provides no information on baseline water quality in the Tallapoosa River, nor does Study Plan 8 indicate that water quality downstream of the Thurlow dam will considered in the license application. It is critical to understand what effect pulsing river stages during existing operations and proposed operational alternatives will have on designated uses as well as on water temperature, dissolved oxygen, nutrient levels, and turbidity. APC must include the Tallapoosa River downstream of the Thurlow Dam to the confluence with the Coosa River in the baseline water quality study and in Study Plan 12 (c).

Project Nexus

Please see section 2.1 above.

Methodology

We support APC's method of compiling available water quality information for Lake Martin and the tailrace, continuing water quality sampling in the project's reservoir and tailrace and providing an analysis of nutrient levels in Lake Martin. However, in order to assess water quality issues related to proposed operational alternatives at the Martin Project and to identify emerging trends that may signify additional degradation during the term of any new license for the Martin project, APC must also study past and ongoing discharges of anthropogenic contaminants, increased sediment accumulation, alterations in temperature regimes, reductions in dissolved oxygen, and increases in pollutants in the reservoir, tailrace, and Tallapoosa River below Thurlow Dam. Digital temperature data loggers (thermographs) could be used to continuously monitor water temperatures downstream, incorporating a number of important considerations including the number of times temperature is monitored, interval of collection, and location of sites.

9 Recreation (Study Plan 12(f)

Geographic Scope

In addition to all waters located within the Martin Project Boundary and tailrace of the project the study area should include the Tallapoosa River to the confluence with the Coosa River.

Methodology

The methodology outlined in study plan 12 (f) is descriptive: it aims to show how the system effects recreation; when flows, access, or facilities change; and how recreation opportunities change. While descriptive studies and information is an important component in a recreation study for the Martin Project, APC must also include evaluative studies in order to assess the effects of proposed project operations on recreation and develop protection, mitigation, and enhancement measures that address identified impacts. Evaluative information defines quality conditions related to opportunities. Factors APC must consider in order to assess the effects of proposed project operations on recreation include:

Flow-based recreation studies: The Martin Project largely controls flows in the Tallapoosa River. These river flows, downstream of Thurlow Dam have a profound influence on the type and quality of river recreation opportunities. APC should conduct on-site recreation assessments by panels of experienced users (boaters and anglers) in addition to their proposed descriptive methodologies. We recommend the methodologies described in Whittaker, Shelby, and Gangemi's *Flows and Recreation: A Guide to Studies for River Professionals* (National Park Service and Hydropower Reform Coalition, 2005).[1]

Reservoir levels and recreation studies: An evaluative study that examines how reservoir levels affect boatability, access to fishing, boat stranding, facility use, and

[1] Available online at http://www.hydroreform.org/sites/www.hydroreform.org/files/HRC%20Flows%20and%20Recreation%20Guide.pdf

aesthetics is especially relevant for the Martin Project. APC should consider conducting user surveys and interviews to determine how the proposed rule curve will effect recreation on Lake Martin.

APC must also consider including an economic component in its recreation plan that examines recurring economic issues associated with both reservoir and downstream recreation. The following issues should be addressed:

- The cost to build and maintain recreation facilities.
- Estimation of current and future recreation demand.
- The economic effect of recreational users' expenditures on local and regional economies.
- The willingness of recreation users to pay fees for use of facilities or access to recreation areas.
- The value of recreation opportunities in a broader welfare economics model.

10 Conclusion

We appreciate the opportunity to submit these comments, and look forward to collaborating with FERC staff, APC, and other stakeholders during the relicensing of this project.

Dated: February 17, 2009

Respectfully Submitted,

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