

Study Plan - Lake Martin Rule Curve Change Analysis

1.0 GOALS AND OBJECTIVES OF STUDY

Many stakeholder groups have requested that Alabama Power Company (APC) investigate the feasibility of raising the winter rule curve at Martin. APC's goal of this study would be to determine the feasibility of revising the Martin rule curve by modeling changes involving an increase in winter pool elevation up to 5 feet (485 MD). APC would need to determine potential flood impacts associated with higher winter rule curve levels and also address the duration of the summer pool (e.g., extending the summer pool into October or November).

2.0 RELEVANT RESOURCE MANAGEMENT GOALS

The rule curve analysis will assist APC in making a proposal for the Pre-Application Document (PAD) and Preliminary Licensing Proposal for FERC's analysis in determining new license conditions for the Martin Project. The goal of the analysis will be to determine an appropriate winter pool level that optimizes the many interests in the operation of the Martin project. APC will work with agencies and other stakeholders to ensure that resource management goals for individual resource areas are taken into account and any applicable environmental, cultural, or recreational relicensing studies take into account examining effects of any proposed rule curve change.

3.0 BACKGROUND AND EXISTING INFORMATION

APC has existing tools it is using to develop the appropriate flood control, routing and budget models for Martin to determine the feasibility of raising the winter rule curve. These tools include the Corps of Engineers HEC-RAS and Flood Frequency Analysis (FFA) models, the ACT unimpaired flow data set developed by the Corps and others, APC's Project Routing model, APC's spreadsheet model to determine flow duration and APC's HydroBudget model.

4.0 PROJECT NEXUS

The Project is licensed by FERC and all proposed operational changes must be disclosed and affects addressed in the license application to FERC.

5.0 STUDY AREA AND STUDY SITES

The study area includes all of the waters located within the Martin Project boundary and the tailrace of the Project. It also includes looking at effects on inflows to APC's downstream Yates and Thurlow Project, and resulting flows downstream of the Thurlow Project in the Tallapoosa River. The upstream Harris Project will not be affected by changes in the Lake Martin rule curve.

6.0 PROPOSED METHODOLOGY

- 1) Develop the Flood Frequency Analysis (FFA) to determine the statistical frequency of historical flood event.

- 2) Develop a 100yr design flood based off the FFA considering peak timing and volume of the event.
- 3) Develop the HEC-RAS model for Martin and for downstream.
- 4) Develop the Project Routing model to route the flood thru the dam determining the appropriate outflow and elevation.
- 5) Route the 100 yr design flood for the current flood control and rule curve as well as for any proposed flood control and rule curve to be limited to a reasonable number of runs.
- 6) [Working with stakeholders, develop a “short list” of rule curve elevation changes and extensions of time at summer pool in the shoulder seasons for analysis by the models.](#)
- 7) Evaluate the results and identify any impacts to downstream resources.
- 8) Flow duration analysis for low flow scenarios.
- 9) HydroBudget analysis to determine the cost associated with increased winter pool elevations.
- 10) [Provide results to stakeholders for review.](#)

7.0 CONSISTENCY WITH GENERALLY ACCEPTED SCIENTIFIC PRACTICE

- 1) This same type of analysis was performed in the 1999 Neely Henry study to raise the winter pool levels, and was accepted by the Corps of Engineers and FERC.
- 2) This same type of analysis was performed for the Coosa Relicensing evaluation of raising the winter pool levels at Weiss and Logan Martin, with the methodology being accepted by the Corps of Engineers and FERC.

8.0 PRODUCTS

Data and documentation of the analyses from this study will be included in the PAD and Preliminary Licensing Proposal. Any draft reports generated as part of this study will be distributed to the MIG 3 for review and comment.

9.0 SCHEDULE

Conduct Analysis	September – January 2008
Present Results	February – April 2008
Provide workshop on modeling	April 2008
Incorporate APC’s Proposal to further investigate changes in elevation and timing of rule curve into PAD	June 2008
Submit final study plan for FERC review and approval	November 2008
FERC anticipated approval	April 2009
Conduct evaluations	April 2009-December 2009
Present results of evaluations	February 2010
Discussions with stakeholders	March – August 2010

10.0 LEVEL OF EFFORT AND COST

APC estimates that consultation with the MIG 3 and development of models and analysis on the potential rule curve change at Lake Martin will cost approximately \$250,000.

11.0 REFERENCES