



ALABAMA POWER COMPANY

BIRMINGHAM, ALABAMA

MARTIN HYDROELECTRIC PROJECT

FERC NO. 349

STUDY PLAN 3 – EVALUATION OF MINIMUM FLOWS DOWNSTREAM OF MARTIN DAM

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Prepared by:



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TABLE OF CONTENTS

1.0	GOALS AND OBJECTIVES OF STUDY.....	1
2.0	RELEVANT RESOURCE MANAGEMENT GOALS	1
3.0	BACKGROUND AND EXISTING INFORMATION	1
4.0	PROJECT NEXUS	1
5.0	STUDY AREA AND STUDY SITES.....	2
6.0	PROPOSED METHODOLOGY	2
7.0	CONSISTENCY WITH GENERALLY ACCEPTED SCIENTIFIC PRACTICE	3
8.0	PRODUCTS.....	3
9.0	SCHEDULE.....	3
10.0	LEVEL OF EFFORT AND COST.....	4
11.0	REFERENCES	4

**STUDY PLAN 3 – EVALUATION OF MINIMUM FLOWS
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1.0 GOALS AND OBJECTIVES OF STUDY

Operation of hydroelectric projects in a peaking mode could result in impacts downstream of the project in the tailrace area. The Alabama Department of Conservation and Natural Resources (ADCNR) and U.S. Fish and Wildlife Service (USFWS) would like to characterize the tailrace at Martin and understand the relationship of project operation and the potential impacts of hydro peaking on the aquatic fauna and aquatic habitat in the tailrace area downstream of the Martin Project and downstream in the Tallapoosa River below the Thurlow Dam. In addition, the agencies are interested in system wide flow management of Tallapoosa River. In particular, the ADCNR would like to explore possibilities for flexibility in the Martin Dam operations that could enhance downstream areas – Martin tailrace, Yates reservoir, Thurlow reservoir, and the Tallapoosa River downstream of Thurlow Dam.

2.0 RELEVANT RESOURCE MANAGEMENT GOALS

The ADCNR manages recreational fisheries downstream of the Martin Project. Understanding any flexibility in project operations that still allows peaking would allow ADCNR and USFWS to work with APC to develop strategies to offset impacts associated with peaking where practical.

3.0 BACKGROUND AND EXISTING INFORMATION

There is limited data available for the Martin tailrace in terms of water quality, fisheries, rare, threatened, or endangered (RTE) species, and habitat parameters. Tailrace information for fish populations may be available through the ADCNR Reservoir Management Reports. Other recent information is presented in the Preliminary Application Document for the Martin Hydroelectric Project (APC, 2008). 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.

4.0 PROJECT NEXUS

Operation of the Martin project affect the tailrace aquatic habitat downstream of the Martin Dam and to some level, areas downstream of Thurlow Dam. This study will help to determine the magnitude of impacts (related to hydro peaking) on the Martin Project tailrace area and downstream areas and identify project flexibility for enhancing downstream aquatic habitat conditions and lessening project related impacts.

5.0 STUDY AREA AND STUDY SITES

The study area for this issue would include the immediate tailrace area downstream of the Martin Dam and to some extent the Tallapoosa River downstream of Thurlow Dam.

6.0 PROPOSED METHODOLOGY

The methodology for this study includes three parts:

- 1) review of project operations;
- 2) review existing environmental data for the Tallapoosa downstream of Thurlow Dam; and
- 3) perform limited field surveys in the Martin Dam tailrace as needed to evaluate habitat potential for unionids (mussels and snails).

Review of Project Operations and Existing Data

MIG 1 members will review seasonality of historic flows and peaking operations. This analysis will also include review of potential drought operation scenarios and the existing environmental data collected downstream of Thurlow Dam as part of the license compliance requirements. After review of this data, any field survey information needed (data type and location) will be identified and collected.

Field Sampling, Data Analysis and Reporting

The level of field sampling needed will be determined based on the results of the review of project operations. Surveys may include:

- Limited reconnaissance surveys to define the Martin tailrace and establish sampling areas.
- Sampling locations will be documented on maps (electronic and hard copy format).
- Habitat survey to determine available macroinvertebrate and fish habitat.
- Fish Sampling to gather fish community data at designated sampling sites. Fish sampling would be qualitative and quantitative in nature and used to characterize the species present in each sampling reach. Because habitat types are quite deep (*i.e.*, lack of wadeable areas), sampling would primarily consist of boat electrofishing.
- Mussel, Snail, and Crayfish Sampling to gather occurrence and distribution data may need to be collected.
- Water Quality data will be reviewed - both historical (as reported in the Martin Water Quality Data Report) and present day data - including temperature and dissolved oxygen.

The collected data will be assimilated into a report for review by the agencies. This report will be used for discussing the need for any recommended changes in project operation to be considered in APC’s license application. The report will include:

- Results of any sampling conducted in the Martin tailrace.
- Potential impacts of any Drought Management Plan agreed to by APC for future operation.
- Identification of opportunities to enhance the Martin Tailrace for fish and macroinvertebrates through alteration of flows patterns.
- Evaluation of the ability to deliver variable flows from Martin on an annual basis to mimic a more “natural riverine system” below Thurlow.

7.0 CONSISTENCY WITH GENERALLY ACCEPTED SCIENTIFIC PRACTICE

This study employs generally accepted practices for evaluating aquatic habitats at hydroelectric projects. The study methodology is consistent with generally accepted aquatic habitat sampling principles and practices.

8.0 PRODUCTS

Data and analyses from this study will be shared periodically with the agencies and the MIG 1 during the study phase. A draft report including maps will be distributed to the MIG 1 for review and comment within 6 months of completion of the analysis. A final report will be provided as part of the draft license application that will include raw data in tabular form, analysis performed, and results and discussion.

9.0 SCHEDULE

This schedule is draft and APC intends to develop a formal schedule with MIG 1 members upon final FERC approval of the study.

Project Operation Review	April - June 2008
APC files Final Study Plan	November 2008
Anticipated FERC Approval	May 2009
MIG 1 Consultation	May 2009 – December 2010
Field Surveys (as needed)	Mid-March to early April 2009
(Fish, Water Quality, Mussel, snail, crayfish)	
Draft Report	December 2009
Discussion of Data	February 2010
Final Report	April 2010

10.0 LEVEL OF EFFORT AND COST

APC estimates the cost of consulting on study plan development, conducting the study and associated generation losses, developing a study report, and discussing the results with all stakeholders is approximately \$150,000.

11.0 REFERENCES

Alabama Power Company. 2008. Preliminary Application Document for the Martin Hydroelectric Project FERC No. 349-134.