

**Study Plan 1 - Lake Martin Adaptive Management Water Quality**

**1.0 GOALS AND OBJECTIVES OF STUDY**

The Alabama Department of Environmental Management (ADEM), Alabama Department of Conservation and Natural Resources (ADCNR), and the U.S. Fish and Wildlife Service (USFWS) have commented that the Martin Project should be managed as to meet State Water Quality Standards in the lake and in the tailrace. Information should be collected to evaluate any proposed changes to the rule curve and to address 303(d) list concerns. The goal for this study is to prepare an adequate baseline of water quality information for Lake Martin and the project tailrace [for use in developing an application for 401 water quality certification and to use in any analysis of potential changes in project operation that may occur as a result of relicensing.](#) [Additionally, a review of existing nutrient inputs to the lake may also be reviewed in relation to water body classifications of Lake Martin.](#)

**2.0 RELEVANT RESOURCE MANAGEMENT GOALS**

ADEM is vested with the authority to award a 401 water quality certificate to the project, which will be incorporated into the new Federal Energy Regulatory Commission (FERC) operating license for the Martin Project. ADEM's goal is for the Martin Project to meet all state water quality standards. The USFWS and ADCNR have similar goals in that they want to reduce or eliminate any project related water quality impacts to aquatic resources associated with the Martin Project. Both of these goals are relevant in protecting the public resources associated with the Martin Project.

**3.0 BACKGROUND AND EXISTING INFORMATION**

A fairly extensive amount of water quality data exists for the Martin Hydroelectric Project. These data have been collected primarily by the Alabama Power Company (APC) and ADEM over the past years. Much of these data are summarized in the APC Water Quality Report (2005), ADEM 305(b) Report (2004), and the APC Preliminary Information Document (2006).

**4.0 PROJECT NEXUS**

Although water quality is influenced greatly by point and non-point pollution, annual hydrology, and weather patterns, it is also related to the presence of the project and project operation. There are some variables that APC manages which may influence the water quality of the Martin Project. One of those variables is the operation rule curve and potential changes to that curve. [If review of the project operations and downstream flood analyses identifies a potential increase to the winter rule curve or change to the amount of time the summer rule curve is in effect at Lake Martin, the implementation of that change and any potential impacts to water quality of the project will need to be analyzed.](#)

## **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. There are multiple historical sampling sites where water quality data has been collected. If future studies are deemed necessary, study sites will align closely with the historical data sites so that deviations in long-term trends can be discerned. As appropriate, additional sites will be added to be consistent with generally accepted water quality sampling principles and practices.

## **6.0 PROPOSED METHODOLOGY**

If review of the project operations and downstream flood analyses identifies a potential increase to the winter rule curve or change to the amount of time the summer rule curve is in effect at Lake Martin, the implementation of that change and any potential impacts to water quality of the project will need to be analyzed.

### **6.1 Continuation of Baseline Water Quality Sampling**

APC will continue their collection of water quality sampling on the lake and tailrace to be used in development of the 401 water quality certification application.

### **6.2 Analysis of Nutrient Levels in Lake Martin**

Nutrient levels in the lake may need to be addressed in relation to lake classifications. If so, APC will examine nutrient inputs into the lake in relation to observed lake productivity. This will be developed with ADEM and with the MIG 2 as deemed necessary.

## **7.0 CONSISTENCY WITH GENERALLY ACCEPTED SCIENTIFIC PRACTICE**

This study will employ generally accepted practices for evaluating water quality at hydroelectric projects. The study methodology will be consistent with generally accepted water quality sampling principles and practices.

## **8.0 PRODUCTS**

Data and analyses from this study will be included in periodic reports to the agencies and the MIG 2. A final Water Quality Report will be provided as part of the draft license application and will include raw data in tabular form, maps of sample sites, and proposed protection and enhancement measures. Any nutrient analysis deemed necessary will also be developed and reported to the agencies and the MIG 2 and included in the Water Quality Report.

## **9.0 SCHEDULE**

APC files Final Study Plan	November 2008
Anticipated FERC Approval	April 2009
Continue collection of baseline Data)	April 2009 – March 2010
Prepare 401 Water Quality Certification	April 2010
Final Report	October 2010

***10.0 LEVEL OF EFFORT AND COST***

The exact cost of this effort is unknown at this point and will be based on the cost to continue baseline sampling, but it could be approximately \$150,000.

***REFERENCES***

Alabama Department of Environmental Management. 2004. Alabama's Integrated Water Quality and Assessment Report 305(b) Report.

Alabama Power Company. 2006. Water Quality Data for the Martin Hydroelectric Project. Environmental Compliance.

Alabama Power Company. 2006. Preliminary Information Document – Water Quality Section.

CH2MHILL. 2005. Tallapoosa River Basin Management Plan. The Clean Watershed Partnership - March 2005.