



ALABAMA POWER COMPANY

BIRMINGHAM, ALABAMA

MARTIN HYDROELECTRIC PROJECT

FERC NO. 349

STUDY PLAN 8 – BASELINE WATER QUALITY

MARCH 2009

Prepared by:



**ALABAMA POWER COMPANY
BIRMINGHAM, ALABAMA**

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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 (if applicable). 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.

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 (Alabama Power) and ADEM over the past years. Much of these data are summarized in the Alabama Power Water Quality Report (2005), ADEM 305(b) Report (2004), and the Alabama Power 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 Alabama Power manages which may influence the water quality of the Martin Project. One of those variables is the existing operation rule curve.

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. 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 Baseline Water Quality Data

Alabama Power will compile all of the water quality information available for Lake Martin and the tailrace. In addition to the information available in the PAD, Alabama Power will consolidate any additional water quality information available for Lake Martin. In addition, Alabama Power will continue their collection of their standard 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 data has been collected over the last several years for Lake Martin by Lake Watch of Lake Martin supported by the Alabama Water Watch Program office at Auburn University and available from the Tallapoosa Clean Water Partnership (CWP). Nutrient levels in portions of the lake and embayments may be increasing – Coley Creek, Sandy Creek, Elkahatchie Creek, Upper Blue Creek, and Upper Tallapoosa near Irwin Shoals. In addition to the existing information, additional sampling of nutrients and basic water quality parameters (Table 1) will be collected at 16 sites (Figure 1 and Table 2) monthly from April through October of 2009. The available nutrient information (CWP, Alabama Power, and ADEM) and this new information will be reviewed and included in a report to describe the current baseline condition. This nutrient information will also be used in any analysis of potential changes to water quality resulting from a change in project operations.

Table 1: Water Quality Parameters to be Collected on Lake Martin During April Through October 2009

Chlorophyll-a	pH	total suspended solids (TSS)
total phosphorus (TP)	turbidity	conductivity
total nitrogen (TN)	alkalinity	water temp
soluble reactive phosphorous (SRP)	hardness	DO
Secchi disk visibility		

Table 2: GPS Locations for Lake Martin Sampling Stations – April – October 2009

TALLAPOOSA WATERSHED PARTNERSHIP SITE #	LAT- DECIMAL	LON- DECIMAL	DESCRIPTION
1	32.79167	-85.99250	Big Kowaliga Creek @ Cedar Point
2	32.73833	-86.01194	Little Kowaliga Creek @ Nero's Point
3	32.72000	-85.93917	Big Kowaliga Creek @ Castaway Island
7	32.73465	-85.82030	Blue Creek @ Stillwaters Marina
10	32.80415	85.85423	Sandy Creek 1 Mile Upstream of Mainstream (ADEM Site 10)
11	32.79250	-85.81750	Sandy Creek @ Smith Landing
12	32.83389	-85.84140	Manoy Creek Embayment (ADEM Site 9)
14	32.83917	-85.89000	Mainstream @ Bay Pine Island
15	32.86112	-85.89643	Dennis Creek Embayment
17	32.87122	-85.91787	Elkahatchee Creek Below Abbott Highway Bridge
18	32.87806	-85.94360	Elkhatachee Creek ½ Mile Below Sugar Creek Confluence (ADEM Site 8)
19	32.90022	-85.88747	Mainstream @ Highway 280 Bridge
20	32.92760	-85.88000	Coley Creek Embayment (ADEM Site 7- Slightly Moved)
21	32.68647	-85.91070	Tallapoosa River Martin Dam Forebay
22	32.73437	-85.88740	Tallapoosa River Upstream of Blue Creek
25	32.93361	-85.86690	Tallapoosa River Upstream of Coley Creek

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

This schedule corresponds to Alabama Power’s Process Plan and Schedule filed with FERC on February 16, 2009. Actual consultation meeting dates will be determined with MIG 1 members upon FERC approval of the study plan.

Alabama Power files Final Study Plan	March 2009
FERC Approval	April 2009
MIG 2 Consultation	April 2009 – December 2010
Collection of baseline WQ Data and Nutrient Data.....	April 2009 – October 2010
Initial Study Report.....	November 2009
Initial Study Report Meeting	December 2009
Prepare 401 Water Quality Certification	April 2010
Final Report	October 2010
FERC Updated Study Report.....	September 2010
Updated Study Report Meeting	September 2010

10.0 LEVEL OF EFFORT AND COST

Alabama Power estimates the cost of collection and analysis of additional nutrient data, consultation, and consolidation of reports to be approximately \$150,000.

11.0 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.

Alabama Water Watch database--Alabama Water Watch Program Office, Auburn University; and Tallapoosa Watershed Project, A Transferable Model of Stakeholder Partnerships for Addressing Nutrient Dynamics in Southeastern Watersheds—Annual Report 2005, dated May 2006

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

