



ALABAMA POWER COMPANY

BIRMINGHAM, ALABAMA

MARTIN HYDROELECTRIC PROJECT

FERC NO. 349

STUDY PLAN 12 (B) – EFFECTS OF A RULE CURVE CHANGE ON SEDIMENTATION RATES AND NUISANCE AQUATIC VEGETATION

NOVEMBER 2008

Prepared by:



**ALABAMA POWER COMPANY
BIRMINGHAM, ALABAMA**

**MARTIN HYDROELECTRIC PROJECT
FERC NO. 349**

**STUDY PLAN 12 (B) – EFFECTS OF A RULE CURVE CHANGE ON
SEDIMENTATION RATES AND NUISANCE AQUATIC VEGETATION**

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	2
5.0	STUDY AREA AND STUDY SITES.....	2
6.0	PROPOSED METHODOLOGY	2
7.0	CONSISTENCY WITH GENERALLY ACCEPTED SCIENTIFIC PRACTICE	2
8.0	PRODUCTS.....	2
9.0	SCHEDULE.....	3
10.0	LEVEL OF EFFORT AND COST	3
11.0	REFERENCES	3

STUDY PLAN 12 (B) – EFFECTS OF A RULE CURVE CHANGE ON SEDIMENTATION RATES AND NUISANCE AQUATIC VEGETATION

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. In Study Plan 12 (a), APC is proposing a study that will model an increase in the winter pool elevation in increments of 1 foot from el. 481 ft msl¹ to el. 486 ft msl (i.e., el. 482, 483, 484, 485, and 486 ft msl) as well as to examine extending the summer pool level in the shoulder seasons (raise the Lake to full pool earlier in the Spring and maintain full pool into the early/mid Fall). As a result of this modeling study, APC must address potential changes to sedimentation rates and resulting potential increase in nuisance aquatic vegetation if Lake Martin's winter rule curve is higher, and the summer pool duration longer, than existing operations.

By holding the lake higher during the winter, shallow water habitat would likely increase, which may have adverse impacts on the lake. The previous 10 ft winter drawdown helps control aquatic vegetation as it freezes the plants and tubers and reduces the chances of additional aquatic vegetation establishing in the lake.

The objectives of this study include:

- 1) identify areas susceptible to increased sedimentation and establishment of nuisance aquatic vegetation; and
- 2) develop a ranking system for these areas that describes the probability of increased sedimentation and establishment of nuisance aquatic vegetation at each proposed winter rule curve 1-ft elevation changes.

2.0 RELEVANT RESOURCE MANAGEMENT GOALS

The consulting agencies regulate recreational fishing and water quality resources on Lake Martin. As part of that responsibility, they would like to identify areas of sedimentation in the lake; to identify areas that currently have or could potentially have nuisance aquatic vegetation; and to identify probability that each 1-ft elevation change in the winter rule curve change (elevation) and duration of summer pool may have on increases in nuisance aquatic vegetation.

3.0 BACKGROUND AND EXISTING INFORMATION

Project operations related to existing lake level fluctuations may result in areas of the shoreline that experience increased sedimentation. Presently, some of the sedimentation issues in the lake are mitigated each year through the 10 foot winter drawdown (*i.e.* winter and spring rains periodically remove sediment accumulations). Agencies have a concern that without the annual 10 ft drawdown, sedimentation may increase in certain areas on the Lake and increase the susceptibility of those areas to an increase in nuisance aquatic vegetation.

¹ Elevation 481 ft msl is equivalent to el. 480 Martin Datum (MD).

To view areas of sedimentation, LIDAR information and flyover photography are available for the project at winter pool. This information may be helpful in identifying areas that may have a high degree of probability of sedimentation. To detect areas of nuisance aquatic vegetation, APC will look at LIDAR data from the lake in 2007, soil data and land use, information from the Aquatic Vegetation Control Group, and APC will also work with agencies to identify possible plants that could create a nuisance.

4.0 PROJECT NEXUS

The Project is licensed by FERC and the proposed operational changes must be disclosed and affects on sedimentation and nuisance aquatic vegetation addressed in the license application to FERC.

5.0 STUDY AREA AND STUDY SITES

The study area includes all of the waters of Lake Martin. The study will identify areas most susceptible to increased sedimentation and potential for increased nuisance aquatic vegetation (i.e., creek mouths and shallow embayments).

6.0 PROPOSED METHODOLOGY

- 1) Identify areas susceptible to increased sedimentation and establishment of nuisance aquatic vegetation through the use of GIS analysis that incorporates LIDAR, soil types, and land uses to identify areas.
- 2) Develop a process to rank the areas in terms of its probability to experience increased sedimentation and establishment of nuisance aquatic vegetation at each proposed winter rule curve level, as described above.
- 3) Develop a report of findings, including maps, and distribute to the MIG 3 for review and comment.
- 4) Develop potential mitigation measures relative to each increment of change in winter pool elevation.

7.0 CONSISTENCY WITH GENERALLY ACCEPTED SCIENTIFIC PRACTICE

The planned study methods discussed above are consistent with typical sedimentation investigations and predictions of patterns associated with nuisance aquatic vegetation.

8.0 PRODUCTS

Data and documentation of the analyses from this study including maps (both electronic and hard copy) will be included in the 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

This schedule is draft and APC intends to develop a formal schedule with MIG 3 members upon Final FERC approval of the study.

Submit final study plan for FERC review and approval.....	November 2008
FERC anticipated approval.....	May 2009
MIG 3 Consultation	April 2009 – December 2010
Conduct evaluations.....	July 2009 – January 2010
Distribute Draft Report	March 2010

10.0 LEVEL OF EFFORT AND COST

APC estimates that consultation with the MIG 3 and analysis and reporting will cost approximately \$75,000.

11.0 REFERENCES