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July 1, 2009



VIA Electronic Filing

Ms. Kimberly D. Bose
Secretary
Federal Energy Regulatory Commission
888 First Street NE
Washington, DC 20426

RE: Clarification of Study Plan 2 - Assessment of the Influence of Shoreline Modifications on Aquatic and Semi-Aquatic Species' Use of Various Shoreline Types for the Martin Hydroelectric Project (FERC No. 349-150)

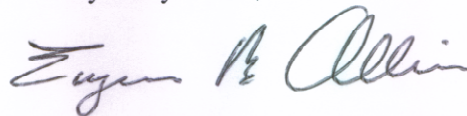
Dear Secretary Bose,

On April 17, 2009, the Federal Energy Regulatory Commission (FERC) issued to Alabama Power Company (Alabama Power) a Study Plan Determination for the Martin Dam Hydroelectric Project (FERC No. 349-150). In its letter, the FERC approved, with some modifications, the 21 study plans filed by Alabama Power on March 18, 2009. In Appendix A of FERC's Study Determination letter, it requested that Alabama Power make certain modifications to Study Plan 2 (Assessment of Fish Density and Species Composition Associated with Various Shoreline Types). On June 16, 2009, Alabama Power filed the revised Study Plan 2 with the FERC, which was renamed Study Plan 2 - Assessment of the Influence of Shoreline Modifications on Aquatic and Semi-Aquatic Species' Use of Various Shoreline Types. The FERC Staff has subsequently requested clarification on two items in the revised study plan. Specifically, Staff requested that Alabama Power clarify extending the length of the survey for this study to September 15, and that Alabama Power include in the study plan the identification of physical characteristics (on-site aquatic vegetation, slope, morphology, bottom soil types and substrates).

In the attached revised Study Plan 2 dated July 1, 2009, Alabama Power clarifies that the periodic observations/surveys for the semi-aquatic species will be performed in the spring (June 2009) and fall (by September 15, 2009.) The sampling period for the aquatic species will remain between April and May of both 2009 and 2010. In reference to the physical site characteristics, Alabama Power has supplemented Section 5.0 of Study Plan 2 to include identification of physical characteristics of the proposed study sites, which will be reported in the final study report.

Alabama Power believes these two clarifications complete the necessary information required for FERC review of Study Plan 2. Any questions regarding this filing should be addressed to Jim Crew at 205-257-4265 or JFCREW@southernco.com.

Very Truly Yours,

A handwritten signature in black ink, appearing to read "Eugene B. Allison". The signature is written in a cursive style with a large, prominent initial "E".

Eugene B. Allison
Hydro General Manager
Alabama Power Company

Attachment: Study Plan 2 (with clarifications) - Assessment of the Influence of Shoreline Modifications on Aquatic and Semi-Aquatic Species' Use of Various Shoreline Types, dated July1, 2009

Cc(w/attachment): Mark Pawlowski, FERC
Lee Emery, FERC
Martin Project Stakeholder Distribution List



ALABAMA POWER COMPANY

BIRMINGHAM, ALABAMA

MARTIN HYDROELECTRIC PROJECT

FERC NO. 349

STUDY PLAN 2 – ASSESSMENT OF THE INFLUENCE OF SHORELINE MODIFICATIONS ON AQUATIC AND SEMI- AQUATIC SPECIES' USE OF VARIOUS SHORELINE TYPES

JULY 1, 2009

Prepared by:



**ALABAMA POWER COMPANY
BIRMINGHAM, ALABAMA**

**MARTIN HYDROELECTRIC PROJECT
FERC NO. 349**

**STUDY PLAN 2 – ASSESSMENT OF THE INFLUENCE OF SHORELINE
MODIFICATIONS ON AQUATIC AND SEMI-AQUATIC SPECIES’ USE OF VARIOUS
SHORELINE TYPES**

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**STUDY PLAN 2 – ASSESSMENT OF THE INFLUENCE OF SHORELINE
MODIFICATIONS ON AQUATIC AND SEMI-AQUATIC SPECIES’ USE OF VARIOUS
SHORELINE TYPES****1.0 GOALS AND OBJECTIVES OF STUDY**

The Alabama Department of Conservation and Natural Resources (ADCNR) has historically recommended that, for protection of aquatic resources, shoreline habitat not be altered as a property is developed. When a property owner has requested to alter the natural habitat by building a seawall or bulkhead, the ADCNR has promoted the use of rip rap by itself or in addition to the seawall to provide a “better” habitat for aquatic species. The ADCNR wishes to investigate the value of this historic recommendation to determine its effectiveness in meeting their goals for aquatic habitat. The ADCNR is especially interested in learning what type structure/material currently used on the lake is the most effective in providing shoreline refuge, habitat, etc., for aquatic and semi-aquatic species.

2.0 RELEVANT RESOURCE MANAGEMENT GOALS

ADCNR manages the recreational fishery of Lake Martin and encourages habitat conservation for semi-aquatic species. Part of that management includes an effort to preserve and protect aquatic and riparian habitats of the lake. ADCNR recommendations to homeowners and developers of shoreline habitats on the lake should be accurate, cost-effective, and help the agency meet their overall goals.

3.0 BACKGROUND AND EXISTING INFORMATION

During fishery collections in the southeast, many biologists have observed a marked increase in the number of fish (abundance and diversity) associated with rip rap areas of lakes when compared with seawall areas. This has typically been accounted for by the diversity of habitats (interstitial spaces, irregular surface, gradual drop-off, etc.) associated with rip rap areas vs. the straight, flat wall of a seawall. Although a number of studies have examined the influence of human shoreline development on fishes, there is no consensus on the impact of development and even less is known about comparing sites within a single lake. It is probable that these modified shorelines reduce the quality of habitat for semi-aquatic species also. Therefore, information gained in regards to this resource would also be beneficial.

4.0 PROJECT NEXUS

Alabama Power Company (Alabama Power) implements shoreline management plans and permitting regulations that allow modification of the natural shoreline and include and/or promote the use of rip rap in front of traditional seawalls. Alabama Power and the ADCNR want to make sure that they are recommending a shoreline structure that protects the shoreline and also protects or enhances aquatic habitat.

The specific objectives of the study are to quantify aquatic species abundance and composition at four different shoreline types and in addition quantify other parameters important to the aquatic community within each of these four habitats/shoreline types, such as substrate composition, macroinvertebrates, and zooplankton density. Another objective is to evaluate how modification of the shoreline may impact aquatic and shoreline habitat for use by semi-aquatic species.

5.0 STUDY AREA AND STUDY SITES

The study will be conducted in the Blue Creek arm of Lake Martin. This area was initially selected in consultation with the Freshwater Fisheries Section of the ADCNR. The area was picked because it contains relatively uniform slope, has representative sites of each of the various shoreline treatment types, and is relatively productive with regard to aquatic species density and distribution. We assume that these characteristics are also helpful in evaluating aquatic and semi-aquatic species use of these areas. It is reasonable to assume that the information collected in the Blue Creek area would be applicable to other areas of the lake for determination of potential effects (both positive and adverse).

Four to five replicate study sites with similar physical characteristics (aquatic vegetation, slope, morphometry, bottom soil types, substrates, presence/absence of piers, and depth) will be selected for each of four treatments (undeveloped shoreline, shoreline with seawall, shoreline with both seawall and rip rap, and shoreline reinforced with large stone or rock).

6.0 PROPOSED METHODOLOGY

The proposed method for implementing this study would include a review of literature available on various shoreline structures (*i.e.*, seawall, seawall/rip rap, large stone or rock reinforced shoreline – including construction costs) followed by a field study at selected sites that represent the four treatment types (undeveloped shoreline, shoreline with seawall, shoreline with both seawall and rip rap, and shoreline reinforced with large stone or rock) on Lake Martin.

6.1 Data Collection Techniques for Aquatic Species

Initially, multiple study areas on Lake Martin will be selected by Alabama Power and ADCNR that include the four treatment types for this study – natural undeveloped, traditional seawall, seawall/rip rap, and large stone or rock reinforced shorelines. Sites

will be selected while the lake is at the winter pool level. At least four sites for each treatment type of habitat will be geo-referenced and photographed upon selection.

Sampling will be conducted while the lake is at or near full pool, generally between April through May, of both 2009 and 2010. Two types of electrofishing will be used, likely conducted once every 2 weeks at night (to ensure adequate catch rates), including traditional boat/boom electrofishing, and prod pole electrofishing (which allows effective sampling of shallow nearshore areas). All fish that are shocked will be identified, counted, and measured (total length in mm). Fish that cannot be identified in the field will be returned to the laboratory for identification. Larger sport fishes (e.g., largemouth bass, spotted bass, crappie) will have their diets removed via tubing in the field (Van Den Avyle and Roussel 1980). Stomach contents will be returned to the lab for analysis. Once each year, a sample of fishes will be retained from the primary sport fish species (likely largemouth bass, spotted bass, crappie). These fish will be returned to the lab where their otoliths will be removed and the fish aged and growth backcalculated using standard techniques (DeVries and Frie 1996). Zooplankton and benthic macroinvertebrates will also be collected at each site to quantify potential food resources for fish populations. Zooplankton will be collected using vertical net hauls and benthic macroinvertebrates with artificial substrates and grab samples. Finally, other water quality parameters (e.g., water temperature, dissolved oxygen) will be collected at each site during each sampling period.

Analysis includes comparison of species composition and species richness across shoreline treatments through time for both years. In addition, the biomass of food that key species (likely largemouth bass, spotted bass, crappie) consume will be measured and compared across shoreline treatments, as well as growth of these key species across shoreline treatments. The combined data will allow testing (using a replicated design) to determine if there are differences in the fishes associated with the four treatment types of shorelines.

6.2 Data Collection Techniques for Semi-Aquatic Species

Habitat Evaluation

Each of the four treatment habitat types (undeveloped shoreline, shoreline with seawall, shoreline with both seawall and rip rap, and shoreline reinforced with large stone or rock) will be evaluated by Mark Bailey – a wildlife expert and lead author on the *Habitat Management Guidelines for Amphibians and Reptiles of the Southeast*. In addition to the four treatment types described above, two additional Natural Undeveloped shoreline areas in the Blue Creek vicinity will also be included for observations to be used to describe “baseline condition”.

Mr. Bailey will determine which treatment types would likely have the least impact on semi-aquatic amphibians and reptiles common to the area. Mr. Bailey will observe each sample area and take photos and notes for each site. Using current information and publications, he will assess the shoreline treatment types to determine

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**MIG 1 – FISH AND WILDLIFE
FINAL STUDY PLAN**

those that are most beneficial to least beneficial to aquatic and semi-aquatic species common to these areas.

Field Surveys

Periodic observations/surveys will be performed in the spring (June 2009) and fall (by September 15, 2009) by Mr. Mark Bailey to document use of the sites by various semi-aquatic amphibians and reptiles (salamanders, frogs, lizards, turtles, and snakes). In addition, Mr. Bailey will also record information on the presence of birds and semi-aquatic mammals utilizing the shoreline areas. The specific dates for sampling will be determined by Mr. Bailey.

- Daytime Surveys will include timed visual surveys along the shoreline and in the immediate bank area to look for basking snakes and turtles and to assess the ability of turtles to exit the lake to access nesting sites at each shoreline type. Use of each area by shoreline bird and semi-aquatic mammal species will also be collected.
- Evening Surveys will focus on listening for calling males frogs after dark during the spring/summer breeding season).
- All species noted during each type of survey will be identified to the lowest taxonomic level (as possible) and recorded.

6.3 Data Analysis

Collected data will be analyzed to evaluate abundance and species diversity at each habitat type. Based on the findings, recommendations will be made regarding future development of shoreline sites on Lake Martin. Alabama Power will use this study in the development of Best Management Practices regarding the most aquatic/semi-aquatic “friendly” shoreline type.

7.0 CONSISTENCY WITH GENERALLY ACCEPTED SCIENTIFIC PRACTICE

This study employs generally accepted practices for evaluating aquatic and semi-aquatic species abundance and diversity along shoreline areas of reservoirs. The study methodology is consistent with generally accepted sampling principles and practices.

8.0 PRODUCTS

Annual reports will be submitted on July 1st 2009 and 2010. Once this study is completed, a draft report of the findings including maps (electronic and hard copy) of the study area will be available to the MIG 1. Upon review and discussion, a Final report will be filed with the Martin License Application.

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**MIG 1 – FISH AND WILDLIFE
FINAL STUDY PLAN**

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.

| | |
|--|--------------------------|
| Site Selection | March 2008 |
| Alabama Power files Final Study Plan | March 2009 |
| FERC Approval | April 2009 |
| Field Study (Spring)..... | May 2009 |
| | May 2010 if needed |
| MIG 1 Consultation | May 2009 – February 2011 |
| Initial Study Report..... | November 2009 |
| Initial Study Report Meeting | December 2009 |
| Draft Report | November 2010 |
| Final Report | February 2011 |
| 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 consulting on study plan development, conducting the study, and developing a study report is approximately \$175,000.

11.0 REFERENCES

DeVries, D. R. and R. V. Frie. 1996. Determination of age and growth. Pages 483-512 in B. R. Murphy and D. W. Willis, editors. Fisheries techniques, 2nd edition. American Fisheries Society, Bethesda, Maryland.

Van Den Avyle, M.J. and J.E. Roussel. 1980. Evaluation of a simple method for removing food items from live black bass. Progressive Fish-Culturist 42: 222-223.

Document Content(s)

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