Study Plan 2 – Lake Martin Assessment of Fish Density and Species Composition Associated with Various Shoreline Types

1.0 GOALS AND OBJECTIVES OF STUDY

The Alabama Department of Natural Resources (ADNCR) 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 sea wall, the ADCNR has promoted the use of rip rap by itself or in addition to the sea wall 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 species.

2.0 RELEVANT RESOURCE MANAGEMENT GOALS

ADCNR manages the recreational fishery of Lake Martin. Part of that management includes an effort to preserve and protect aquatic 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 sea wall 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 sea wall. However, no site specific studies of this issue in the southeast are currently known.

4.0 PROJECT NEXUS

APC 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 sea walls. APC and the ADCNR want to make sure that they are recommending a shoreline structure that protects the shoreline and also protects or enhances fishery habitat.

5.0 STUDY AREA AND STUDY SITES

The study area for this issue would include selected shoreline areas of Lake Martin. Multiple study sites will be selected around Lake Martin that will include four general habitat types – natural undeveloped, traditional sea wall, sea wall with rip rap, and modified stone or rock reinforced shorelines.

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 types of shoreline habitats on Lake Martin. APC will work with ADCNR to identify sampling sites and analysis techniques.

6.1 Data Collection Techniques

Initially, multiple study areas on Lake Martin will be selected by APC and ADCNR that include the four habitat types for this study – natural undeveloped, traditional sea wall, sea wall/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 type of habitat will be geo-referenced and photographed upon selection.

Boat electrofishing will be performed at each site during the spring (May). Boat electrofishing will be performed along each shoreline in 3 to 5 feet water depth. Sampling effort will be determined prior to sampling through initial investigations at each site. Effort will be based on the amount of habitat available at each site, and every effort will be taken to standardize sampling effort and/or document catch per unit effort or catch per unit area.

Fish collected at each sample site will be identified to species and categorized by inch groups. If large numbers of minnows, clupeid, or centrarchids are collected, a sub-sampling routine will be used. Additional data collected at each site will include temperature, dissolved oxygen, and secchi disk reading. All data will be recorded on project specific data sheets that will clearly document collections.

6.2 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.

7.0 CONSISTENCY WITH GENERALLY ACCEPTED SCIENTIFIC PRACTICE

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

8.0 PRODUCTS

Once this study is completed, a draft report of the findings will be available to the MIG 1. Upon review and discussion, a Final report will be filed with the Martin License Application.

9.0 SCHEDULE

Site Selection	March 2008
APC files Final Study Plan	November 2008
Anticipated FERC Approval	April 2009
Field Study (Spring)	May 2009
	May 2010 if needed
Draft Report	November 2010
Final Report	February 2011

10.0 LEVEL OF EFFORT AND COST

APC estimates the cost of consulting on study plan development, conducting the study, and developing a study report is approximately $100,000.