

**Catawba-Wateree Hydro Project (FERC No. 2232)**  
**Study Plan**

**Study Plan Name:** Breeding and Migratory Bird Study

**Study Plan Designation:** Terrestrial 05

**Study Short Description:** Document the existing status of breeding and migratory birds within the Project boundary and areas within the zone of Project operational influence

**Applicable Hydro Projects/Developments:** All Project Developments (within the Project boundaries and zone of operational influence) including reservoirs, tailwaters and bypasses based on representative and/or significant habitats including the Wateree River downstream of Lake Wateree through to the confluence with the Congaree River

**Prerequisite Study Designation:** None

**I. Study Objective**

The objectives of this avian study are to: 1). Characterize the existing breeding, resident, and migratory bird communities of the Project area; 2). Assess any effects of current and any proposed Project-related hydropower operations on the breeding and migratory species and communities; and 3). Provide information to assist in developing any potential protection, mitigation, and enhancement (PM&E) measures.

This study will also provide information needed to support several other relicensing studies including:

- A Project-wide vegetation cover map
- RTE Species Habitat Survey (Terrestrial 04)
- Great Falls Bypass Wildlife Survey (Terrestrial 06)

**II. Basis**

This study will provide baseline information on avian species composition and distribution, and habitat characteristics of the existing avian communities associated with the Project area as required by 18 CFR 4.51 (f). This information will provide the basis for evaluating any potential Project effects on these resources which will be summarized in Exhibit E of the License application. These items are required under NEPA and are required for license review under the Federal Power Act.

**III. Geographic and Temporal Scope**

This study will focus on representative and high value habitat areas located within project boundaries and the zone of operational influence. This study will be conducted during the spring migration (i.e., early March through late May 2004) and fall/winter migratory periods (mid-August 2004 through mid-January 2005) for both waterbirds/raptors and passerines, as well as the breeding period for these and resident species (early to late June 2004).

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### IV. Summary of Existing Data

There is little Project specific information concerning breeding and migratory bird communities. Existing information from pertinent sources such as field guides, breeding bird surveys, Christmas bird counts, and regional and county species lists (e.g., Mecklenburg Department of Parks and Recreation) will be used to provide an initial list of avian resources in the Project area. This information along with available habitat information will be used to establish representative and/or significant sampling areas.

### V. Methodology

The following methods will be used to inventory and characterize the avian resources associated with the Project area.

#### Task 1 – Compile Existing Information

- Prepare a list, based on existing literature, of the avian species known or potentially occurring in the Project area, as well as their preferred habitats. Existing information will include field guides, Breeding Bird Surveys in the vicinity of the Project area, local and regional Christmas Bird Count information, regional and state bird lists, information from the Partners in Flight Program (including priority habitats and species), the South Carolina Breeding Bird Atlas, North Carolina Breeding Bird Distributional Survey (to be completed 2003-2004), habitat suitability index models, and agency consultation. A cover type map, based on current aerial photography, will be prepared for this study as well as several others and will cover the entire Project area. This map will provide the basis for the determination of inventory areas.

#### Task 2 – Inventory and Characterize the Avian Community

The characterization of existing migratory and breeding avian communities will involve several subtasks as described below. This task will be used to provide necessary baseline information and help characterize the existing avian community.

- Using the information prepared in Task 1, field surveys will be conducted to determine the composition and distribution of avian species in the Project area. The specific avian surveys are as follows:

Surveys for avian resources will be conducted through use of point counts along established transects (Cooperrider et. al. 1986; Hamel et. al. 1996; Ralph et al. 1993; Ralph et. al. 1995). Point counts for avian species will involve a qualified observer surveying at established sample points and recording all the birds seen and heard over a 10 minute period. The 10-minute period will be divided into increments of two, three, and five minutes. The point counts for migratory species will begin at sunrise and continue through the day in an effort to capture both passerine and non-passerine species. Breeding bird surveys will focus on the time period from sunrise through approximately 10:30 AM to coincide with the territorial males' peak singing time. Resident and migratory birds can be surveyed throughout the daylight hours. The order in which the points will be surveyed will change from survey to survey to reduce temporal bias. The approximate location of each bird detected will be recorded on a field map along with notes on activity. This will reduce the probability of recording the same individual more than once and will be used to estimate the number of birds present at each point (i.e., relative abundance). Only those birds seen or heard within the breeding and migratory 50-meter circular plot will be

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recorded for the point count analysis. Incidental flyovers and those outside of the standard plot will be documented separately.

The point count stations will be located in representative and high value habitat areas within the entire Project area (e.g., emergent and forested wetlands of upper Lake James, Lake Norman State Park, adjacent gamelands, Cowans Ford area, bottomlands of the Great Falls Bypass, Wateree River bottomlands). Waterfowl, wading bird, and waterbird survey points will be located in or adjacent to wetland, riparian, or shoreline areas in an effort to more accurately document these species. Additional significant areas such as the two known great blue heron rookeries (Davidson Creek and the Marshall Steam Station ash basin) will also be documented. The number of point count stations will be based on the availability of representative habitat within or immediately adjacent to the Project boundary. A Global Positioning System (GPS) will be used to permanently record the location of these stations and these locations (as well as the vegetation community attributes) will be mapped via the GIS. All the birds seen or heard at these stations will be documented on standard point count forms. These forms include the point count location map, data form, and location and vegetation habitat form.

Each station will be visited at least twice during the spring migration period (early March through late May); twice during the breeding period (early June through late June); and six times during the fall migration and wintering period (mid August through mid January). The migration surveys during the spring and fall will coincide with the passage of weather fronts (i.e., warm fronts in the spring and cold fronts in the fall) (Lincoln 1989). During the spring period, NEXRAD will be observed to see when the large flights are crossing the Gulf of Mexico. Surveys will not be conducted when rain or wind interfere with the audibility of bird sounds, or when fog or rain interferes with bird identification. The habitat at each station will be adequately described in an associated sampling form including location, community type, vegetation type, vegetation structure, slope, number of snags and other pertinent community information. Species richness (total number of species) will be determined for each habitat by pooling data from all surveys. The mean number of species detected per visit per sample point for each habitat type and the relative abundance (number of individuals detected per visit per sample point) will also be calculated for the representative and high value habitat types.

Other general information gathered during this study will be general health of the communities, other wildlife observations, evidence of erosion, and site quality conditions.

#### Task 3 – Determination of Project Effects

The objective of this task is to evaluate and provide an understanding of the effects Project operations, both the current and any reasonable future water regimes, on the avian resources within the Project area. The current condition of avian communities will be assessed through the habitat structure, species composition and distribution, evidence of disturbance (e.g., fluctuation), and presence of representative or indicator species. These factors will be related to the existing water regime to assess potential Project effects. This assessment will incorporate a spatial analysis using GIS overlay maps of cover type, avian composition, contours, and other relevant information.

#### Task 4 - Prepare Technical Report

A Draft and Final technical report will be prepared for this Project that includes the following elements:

- a) Project Introduction and Background
- b) Study areas;
- c) Methodology;
- d) Discussion and Analysis

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- e) Results (includes impact discussion)
- f) Location maps, GIS analysis and photos;
- g) Any agency correspondence and or consultation;
- h) Literature citations

**VI. Schedules and Required Conditions**

The schedule, timeline and required conditions for this project area as follows:

- Task 1 Compile Existing Information Early Spring 2004
- Task 2 Inventory and Characterize the Avian Community Spring, Summer, Fall and Winter 2004, Winter 2005
- Task 3 Determination of Project Effects Winter 2004/2005
- Task 4 Prepare Technical Report Winter/Spring 2005

**VII. Use of Study Results**

This study and associated results will provide both quantitative and qualitative information that will be important in characterizing existing conditions as well as providing information on potential Project impacts as they related to preparation of the License Application and specifically Exhibit E. The technical report will provide sufficient information for development and incorporation into any associated NEPA documentation. The avian information associated with the technical report can also be used as a basis for any future PM&E discussions.

**VIII. Study Participants**

	<u>Name</u>	<u>Organization</u>	<u>Phone #</u>	<u>E-Mail</u>
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<b>Other Participants</b>				

**IX. List of Attachments**

Attachment A- Field Forms

**X. List of References**

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- Cooperrider, A.Y., R.J. Boyd, H.R. Stuart (eds.). 1986. Inventory and Monitoring of Wildlife Habitat. U.S. Dept. Inter., Bur. Land Manage. Denver, CO. 858 pp.
- Crump, M.L. and N. J. Scott, Jr. 1994. Visual Encounter Surveys. Pp. 84-92 in Measuring and Monitoring Biological Diversity: Standard methods for Amphibians (Heyer ed.). Smithsonian Institution Press, Washington D.C.
- Hamel, P.B., W.P. Smith, D.J. Twedt, J.R. Woehr, E. Morris, R.B. Hamilton, and R.J. Cooper. 1996. A land manager's guide to point counts of birds in the Southeast. Gen. Tech. Rep. SO-120. New Orleans, LA: U.S. Dept. of Agriculture, Forest Service, Southern Research Station. 39 pp.
- Lincoln, F.C., S.R. Johnson, J.L. Zimmerman. 1998. Migration of Birds. U.S. Dept. of Interior, USFWS, Washington, D.C. Circular 16. 113 pp.
- Martin, W.H., S.G. Boyce, and A.C. Echternacht (eds.). 1993. Biodiversity of the Southeastern United States: Lowland Terrestrial Communities. John Wiley and Sons. New York, New York. 502 pp.
- Ralph, C.J., G.R. Geupel, P. Pyle, T.E. Martin, and D.F. DeSante. 1993. *Handbook of Field Methods for Monitoring Landbirds*. Gen. Tech. Rep. PSW-GTR-144. Albany, CA: Pacific Southwest Research Station, Forest Service, U.S. Department of Agriculture. 41 pp.
- Ralph, C.J., J.R. Sauer, and S. Droege, Technical Editors. 1995. *Monitoring Bird Populations by Point Counts*. Gen. Tech. Rep. PSW-GTR-149. Albany, CA: Pacific Southwest Research Station, Forest Service, U.S. Department of Agriculture. 187 pp.
- South Carolina Breeding Bird Atlas. <http://water.dnr.state.sc.us/wild/bbatlas/bba.html>
- SC Department of Parks, Recreation, and Tourism. 1994. Animals and plants of South Carolina's Catawba River corridor. Columbia, SC. 30 pp.

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**ATTACHMENT A  
AVIAN SURVEY FIELD FORMS**

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**POINT COUNT LOCATION MAPPING**

[ ][ ]	[ ][ ][ ][ ][ ][ ][ ][ ][ ][ ]	[ ][ ][ ][ ]	[ ][ ]	[ ][ ]	[ ][ ][ ][ ]	[ ][ ]
<i>STATE</i>	<i>REGION</i>	<i>STATION</i>	<i>MONTH</i>	<i>DAY</i>	<i>YEAR</i>	<i>POINT</i>
[ ][ ][ ][ ]		<i>DIR</i>				
<i>TIME</i>						

**MAPPING SYMBOLS**

<b>CODE</b>			<b>CODE</b>	
S		<i>Position of Singing Male</i>	M	<i>Male observed</i>
S		<i>Approximate position of singing male</i>	F	<i>Female observed</i>
S		<i>Simultaneous song of 2 males</i>	C	<i>Calling, sex unknown</i>
S		<i>Known change in position</i>	P	<i>Pair together assumed mated</i>
S		<i>Assumed change in position</i>	O	<i>Observed, sex unknown</i>
N	<i>MAWA*</i>	<i>Nest</i>		



