

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

**Study Plan Name:** Great Falls Bypass Wildlife Study

**Study Plan Designation:** Terrestrial 06

**Study Short Description:** Inventory terrestrial and aquatic wildlife within the Project boundary and areas within the Project operational influence in association with the Great Falls Bypass

**Applicable Hydro Projects/Developments:** Bypass reach and areas within the Project boundary as associated with the Great Falls-Dearborn Development.

**Prerequisite Study Designation:** None

**I. Study Objective**

The objectives of this wildlife study are to: 1). Characterize through existing information and survey the existing wildlife communities of the Great Falls bypass; 2). Assess the effects of Project-related hydropower operations areas on these wildlife 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 type map
- RTE Species Habitat Survey (Terrestrial 04)
- Great Falls Bypass Botanical Survey (Terrestrial 03)

**II. Basis**

This study will provide baseline information on the species composition and distribution, habitat characteristics, and relative condition of the existing wildlife communities associated with the Great Falls bypass 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 only on the Great Falls Bypass between the Fishing Creek Dam and the Rocky Creek reservoir and the area immediately adjacent. Field components of this study will be conducted between mid-March of 2004 and mid-January of 2005.

**IV. Summary of Existing Data**

Few studies have been conducted that provide information on the ecological communities associated with the Great Falls bypass. The only recent information for this area is associated with a 2001 biological survey and associated report conducted by L.L. Gaddy (prepared for Duke Power) entitled *A Brief Overview of the Flora and Fauna of the Catawba Shoals near the Town of Great Falls, South Carolina*. Other sources such as field guides, breeding bird survey data, and regional and county species lists will

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also be used to characterize this area. Duke Power currently has Year 2000 true color, digitally orthorectified photography at a 1:10,000 scale for most of the Catawba Project. The botanical study (Botanical 02) associated with this bypass area will provide the existing habitat information for this study.

### V. Methodology

The following methods will be used to classify and characterize the wildlife resources associated with the Great Falls Bypass.

#### Task 1 – Characterize Wildlife Community

The characterization of the existing wildlife community will involve several subtasks as described below. This task will be used to provide necessary information and help identify the representative wildlife species and habitats.

- Through the use of the Gaddy report and other information such as the Botanical 02 study, USGS 7.5 minute quadrangles, NWI maps, recent aerial photography, wildlife habitats within the bypass area will be mapped. This information and the Project boundary information will be transferred and digitized into the Geographic Information System (GIS) and preliminary community maps will be prepared.
- Based on existing literature and discussions with area SCDNR/SCPRT biologists, a list of the wildlife species known or potentially occurring in or near the Great Falls Bypass area will be prepared.
- Using the information prepared in Task 1, field surveys will be conducted to determine the composition and distribution of wildlife species in the bypass area. The field surveys will focus on the following wildlife groups:

#### Reptiles and Amphibians

Due to the clandestine nature of most amphibians and reptiles, specific techniques utilized during specific seasons and under a variety of environmental conditions are required to determine the presence or absence of most species. Consequently, habitats suitable for RTE species within the study area will be surveyed using the techniques most likely to reveal the presence of the species in question, but at the same time do not compromise the safety or well-being of the researcher. For example, if suitable bog turtle (*Clemmys muhlenbergii*) habitat is found, manual sampling of the bog and turtle “runway” traps would be employed to determine if the species is present.

Techniques that will be used include:

- Manual Field Collecting - Manual field collecting techniques include turning potential cover objects while walking through study areas searching for amphibians and reptiles and manually listening for frog choruses. Surveys for frogs, salamanders, and turtles) will consist of direct searches for egg masses and larval forms in any pool areas, searching shallow water zones for amphibians, and turning over rocks, debris, and litter to find both adults and larval amphibians.
- Dip Netting and Seining - Some species, especially tadpoles and larval salamanders, can be effectively sampled by means of dip nets, or small-mesh seines. These techniques will be used where appropriate to sample for these species.
- Aquatic Traps - Minnow traps and turtle traps may be used in suitable areas for capturing a variety of aquatic species and the aquatic stages of amphibians (tadpoles and salamander larvae). Large-mouthed turtle traps are necessary for the capture of turtle species. Aquatic

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traps will be set for prescribed periods and checked a minimum of every two days during the scheduled sampling periods.

- Automated Recording Systems – Automated recording systems composed of a microphone, cassette tape recorder and timer may be deployed to monitor choruses of frogs and toads inhabiting the area.

All amphibians and reptiles will be documented. Documentation will include Genus, Species, Life Stage, Date, Time of Day, Weather Conditions, GPS Coordinates, Technique, Collector Name, and any other pertinent data. All amphibians and reptiles (RTE or not) will be vouchered, primarily using digital imagery that allows positive identification to the species level. Limited voucher specimens of some hard-to-identify species of life stages (e.g., tadpoles) may be collected to allow positive identification. All calling anurans will be vouchered with cassette or digital recordings.

Surveys for both aquatic and terrestrial species will be conducted through the appropriate breeding periods which can include early spring (i.e., late March) for the vernal pool breeding species such as most mole salamanders and between June and September for the aquatic and terrestrial species. Survey forms will be developed for the study and will include information on species numbers, life stages, habitat conditions, and survey conditions. Species richness (total number of species) will be determined for each habitat by pooling data from all surveys. However, because species richness may be related to sampling effort, the mean number of species detected per visit per sample area for each habitat type was also calculated. The relative abundance (number of individuals detected per sample area) will also be calculated for all habitat types.

#### Birds

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 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

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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.

#### Mammals

Surveys for mammals will be conducted through use of visual encounter surveys along designated transects established during the Botanical 02 survey. The visual encounter surveys will be augmented through incidental observations and observations of sign such as tracks, scat, and den areas. The location of the sightings will be documented through use of the GPS and then entered into the GIS. ANABAT surveys will be conducted to determine the presence of bats in the area. Pitfall and snap trap/Sherman live trap surveys, using standard sampling methodology, will also be conducted.

Other general information gathered during this study will be general health of the communities, evidence of erosion, and site quality conditions. Vegetation communities and the associated wildlife habitats will be documented during the Terrestrial 03 study. Any rare, threatened, and endangered species (RTE) of known or potential occurrence within the bypass area will be documented during the concurrent RTE 01 study.

#### Task 2 – Determination of Project Effects

The objective of this task is to evaluate and provide an understanding of the effects of Project operations, both the current and any reasonable future water regimes, on the wildlife resources within the bypass area. Current condition of the existing wildlife community will be assessed through their vegetative structure, species composition, distribution within the bypass area, evidence of disturbance, and presence of representative or indicator wildlife species. These factors will be related to the existing water regime to assess potential Project effects. The analysis will incorporate use of GIS overlay maps of cover type, topographic contours, water levels, 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:

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- a) Project Introduction and Background
- b) Study areas;
- c) Methodology;
- d) Discussion and Analysis
- 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 Classify and Characterize Bypass Wildlife Spring, Summer and Fall 2004, Winter 2005\*
- Task 2 Determination of Project Effects Fall 2004/Winter 2005
- Task 3 Prepare Technical Report Fall/Winter 2004 and Winter 2005

\* the Task 1 field component of the study will be conducted to coincide with specific breeding and migratory periods so adequate data is collected during the appropriate period.

**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 wildlife information associated with the technical report can also be used as a basis for any future PM&E discussions.

**VIII. Study Participants**

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<b>Other Participants</b>				

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**IX. List of Attachments**

None

**X. List of References**

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