

## **Saluda Hydro Project (FERC No. 516) Study Plan**

**Study Plan Name:** Wood Stork Monitoring Plan

**Applicable Hydro Projects:** Saluda Hydro FERC No. 516

### **I. Introduction**

Contained in the Federal Energy Regulatory Commission's (Commission or FERC) Order issuing a New Operating License for Saluda Hydro (FERC Order ¶ 61,332, June 1, 1984), are conditions that require South Carolina Electric & Gas Company (SCE&G) to submit 5 year updates to the Project shoreline management plan. SCE&G submitted the most recent five-year update to the Commission on February 1, 2000. The Commission issued an order approving and modifying the updated shoreline management plan on June 1, 2004 (FERC Order No. 20040623-3015). Item H of the order requires that SCE&G, in consultation with the South Carolina Department of Natural Resources (SCDNR) and the U.S. Fish and Wildlife Service (USFWS), designate two identified wood stork "roosting and foraging habitats" near Bush River as "conservation areas." Further, the order requires that these areas, as well as all other wood stork roosting and foraging habitat identified within the project boundary, remain protected and undeveloped until new evidence is submitted to indicate that protection of these areas is not warranted.

In response, SCE&G initiated consultation efforts with the SCDNR and USFWS. Following an initial reconnaissance survey to confirm wood stork activity within the project area (See Survey Trip Report; Attachment A), a meeting was held on September 17, 2004, among SCE&G and the resource agencies to begin development of a framework for a long-term study plan (See meeting notes; Attachment B).

### **II. Summary of Existing Data**

The wood stork was federally-listed as endangered on February 28, 1984 (USFWS 1997). The only stork native to North America, wood storks occurred historically throughout the coastal plain of the southeastern U.S. and Texas. The current U.S. breeding population has declined from an estimated 20,000 pairs in the 1930's to between 5,500 and 9,500 in recent years, with declines attributed primarily to loss of suitable foraging and nesting habitat. Currently, nesting of the species in the U.S. is thought to be limited to the coastal plain of South Carolina, Georgia, and Florida (USFWS 1997). No critical habitat has been designated for this species.

Wood storks are highly colonial and typically nest in large rookeries and feed in flocks (USFWS 1997). Typical foraging habitats include narrow tidal creeks, flooded tidal pools, and freshwater marshes and wetlands. Like most other wading birds, storks feed primarily on small fish. However, because wood storks feed by tactilocation, depressions where fish become concentrated during periods of falling water levels are

particularly attractive sites (USFWS 1997). Storks typically use tall cypresses or other trees near water for colonial nest sites. Nests are usually located in the upper branches of large trees and several nests are typically located in each tree. Trees utilized for nesting and roosting typically provide easy access from the air and an abundance of lateral limbs (USFWS 1997).

As previously noted, wood storks are primarily birds of freshwater and brackish wetlands along the coastal plain. However, wood stork activity has been reported by local residents at several locations within the Lake Murray area in recent years (See Attachment A, Figure 1). In addition, on August 11, 2004, Tom Murphy of the SCDNR observed approximately 60 storks feeding at various locations in the middle Saluda River area and the upper portion of Lake Murray while conducting an aerial survey for bald eagles (See Attachment A, Figure 2). In response to these sightings, SCE&G, in coordination with the USFWS and SCDNR, conducted an aerial reconnaissance in the upper portions of Lake Murray on August 27, 2004 (See Survey Trip Report; Attachment A). During this reconnaissance survey, biologists from SCDNR and Kleinschmidt documented approximately 60 wood storks foraging within the Saluda Project Boundary, as well as two potential nesting sites along the floodplain of the middle Saluda River (See detailed study observations in Attachment A).

### **III. Study Objectives**

The overall study objective is to document where and under what conditions wood storks are utilizing habitats within the Saluda Hydro Project Boundary and in the project vicinity. In consultation with the SCDNR and the USFWS, a number of specific objectives have been identified (See September 17, 2004, meeting notes; Attachment B), including the following:

- Examination of the potential influence of the Lake Murray drawdown on the presence of storks in the area (i.e. whether and/or to what degree storks will continue to utilize the project once the reservoir is returned to its usual operating range).
- Documentation of nesting (i.e., whether the nests observed during 2004 were in fact stork nests, and if so, if successful reproduction is taking place).
- Documentation of foraging habitat and roosting areas, in particular, documentation of important night roosts (if they exist).
- Examination of foraging conditions over multiple years and a range of water levels.
- Documentation of seasonal usage by various age classes (i.e., young-of-year, immature, adult).

The following tasks must be undertaken and completed in order to meet the above objectives:

- a) Review and compilation of all credible anecdotal accounts of wood stork occurrences within the Saluda Hydro Project Boundary and in the project vicinity.

- b) Completion of surveys to document current wood stork usage of areas within the Saluda Hydro Project Boundary and in the project vicinity.

#### **IV. Geographic and Temporal Scope**

The Saluda Hydro Project Boundary will be the focal point of the wood stork study. The study area will include the main body of Lake Murray and the Middle Saluda River, from the Saluda Dam upstream to the vicinity of Silverstreet and including all tributaries within the project boundary.

Surveys for wood storks will commence in mid-February 2005 and continue through the fall of 2009 (5 years of study). On an annual basis, surveys will begin in mid-February, when storks would be expected to arrive in South Carolina, and continue on a monthly basis through November or until it is determined, in consultation the resource agencies, that storks have left the area.

In consultation with the USFWS and SCDNR, SCE&G proposes to designate the two wood stork foraging and roosting habitats cited in the FERC's order, as well as all other areas within the project boundary where wood stork activity has been documented (See Figures 1 and 2; Appendix B), as temporary Environmental Research Areas. These Environmental Research Areas will remain protected and undeveloped throughout the execution of this study plan. Upon completion of the study, a determination will be made in consultation with the resource agencies, as to whether or not the areas should be granted permanent protected status. If further protection of these areas is deemed necessary, any parameters, conditions, and/or requirements of that protective status will also be determined at this time.

#### **V. Methodology**

- a) To the degree practicable, SCE&G and/or their consultant will coordinate with local residents to compile all credible occurrences of wood stork activity within the Saluda Hydro Project Boundary and in the project vicinity. Anecdotal occurrence will be considered credible only if they are from experienced observers (i.e., those who demonstrate the knowledge needed to identify wood storks). For all occurrences, information regarding the number of storks, where they were observed, the time of year when they were first and last observed, and the time of day when the birds arrived and departed on a daily basis will be obtained, if available. An attempt also will be made to acquire photo documentation of occurrences whenever possible. While anecdotal, such information has the potential to provide significant insight into the daily movements of storks utilizing the area, as well as annual temporal patterns (i.e., when they first arrive and depart from the region).
- b) Aerial surveys to document wood stork activity within the Saluda Hydro Project Boundary will be conducted on a monthly basis during the 2005 through 2009 nesting and post-breeding seasons (mid- February through approximately November; See Section IV – Geographic and Temporal Scope). Aerial surveys will be conducted

from fixed-wing aircraft, by qualified SCDNR, SCE&G, and/or Kleinschmidt staff. Aerial surveys initially will focus on those locations where wood stork activity was observed during the 2004 wood stork reconnaissance and bald eagle surveys and where stork activity has been reported by local residents (See Trip Report from 8/27/04). At each location where storks are observed, the following data will be collected:

- An estimate of the total number of storks present.
- An estimate of the numbers of storks of various age classes present (i.e., adult, juvenile, young-of-year).
- Evidence of nesting activity (i.e., evidence of egg-laying, nest construction and/or maintenance, presence of pre-flight juveniles).
- Other activity observed (i.e., foraging, roosting, loafing).
- General description of the habitat being utilized.
- GPS coordinates of the location (Lat/Long).

Supplemental ground surveys will be conducted as deemed necessary based on aerial surveys (i.e., to confirm nesting, confirm the number of individuals of various age classes, determine the presence of a night roost, etc.). Appropriate ground survey methods will vary on a site-by-site basis and thus will be developed on an as-needed basis in consultation with the USFWS and SCDNR.

## **VI. Schedule and Required Conditions**

- a) Compilation of all available anecdotal accounts of wood stork occurrences in the project vicinity will commence in November 2004 with the bulk of the information expected to be compiled by February 1, 2005. As will be discussed in greater detail below, an annual report will be issued upon completion of each field season. Results of the initial data gathering effort will be reviewed in consultation with the resource agencies and subsequently included in the 2005 annual report. As with any such effort, additional information will undoubtedly develop throughout the course of the study and will be duly incorporated into that year's annual report.
- b) For the 2005 nesting season, aerial surveys for wood storks will commence in Mid-February of 2005 and continue through approximately November of 2005 (See Section IV – Geographic and Temporal Scope). Surveys will follow this schedule on an annual basis through October 2009 (5 years of study). A brief e-mail update will be distributed to the Wood Stork Work Group following each survey. In addition, an annual report will be issued upon completion of each field season and distributed to the Group to provide an update on the study's progress. The Group will subsequently meet in person or via conference call to discuss the study findings and potential modifications to the study scope.

A more detailed report will be prepared following the second year of the study for inclusion in the SCE&G's Application for New License, which is slated for submission to the FERC in 2008.

## VII. Use of Study Results

Results of the wood stork study will be used as an information resource during discussion of relicensing issues with the SCNDR, USFWS, relicensing issue working groups and other relicensing stakeholders. Specifically, study results will be used to assess, in coordination with the resource agencies, whether permanent wood stork conservation measures are warranted and to help identify appropriate conservation measures.

## VIII. Study Participants

	<u>Name</u>	<u>Organization</u>	<u>Phone</u>	<u>E-mail</u>
<b>Applicant Leads</b>	Stephen E. Summer	SCANA Services, Inc.	(803)217-7357	ssummer@scana.com
	Shane Boring	Kleinschmidt	(803)822-3177	shane.boring@kleinschmidtusa.com
<b>Agency Leads</b>	Tom Murphy	SCDNR	(843)844-2473	murphyt@dnr.sc.gov
	Ed Eudaly	USFWS	(843)727-4707, Ext. 13	Ed_Eudaly@fws.gov
<b>Additional Applicant Contacts</b>	Randy Mahan	SCANA Services, Inc.		rmahan@scana.com
	Alan W. Stuart	Kleinschmidt	(803)822-3177	alan.stuart@kleinschmidtusa.com
	Bill Argentieri	SCE&G	(803)217-9162	bargentieri@scana.com
<b>Other Participants</b>				

## IX. List of Attachments

ATTACHMENT A: August 27, 2004, Wood Stork Aerial Survey Trip Report

ATTACHMENT B: Meeting Minutes from September 17, 2004, conference call with SCDNR and USFWS

## X. List of References

U.S. Fish and Wildlife Service (USFWS). 1997. Revised Recovery Plan for the U.S. Breeding Population of the Wood Stork. U.S. Fish and Wildlife Service, Atlanta, Georgia. 41 pp.

**ATTACHMENT A**

**Trip Report from August 27, 2004, Wood Stork Aerial Survey**

# Wood Stork Aerial Survey Trip Report

## Lake Murray and Saluda River August 27, 2004

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### Survey Attendees

Shane Boring	Kleinschmidt
Tom Murphy	SCDNR Endangered Species Biologist
Bucky Harris	SCDNR Pilot

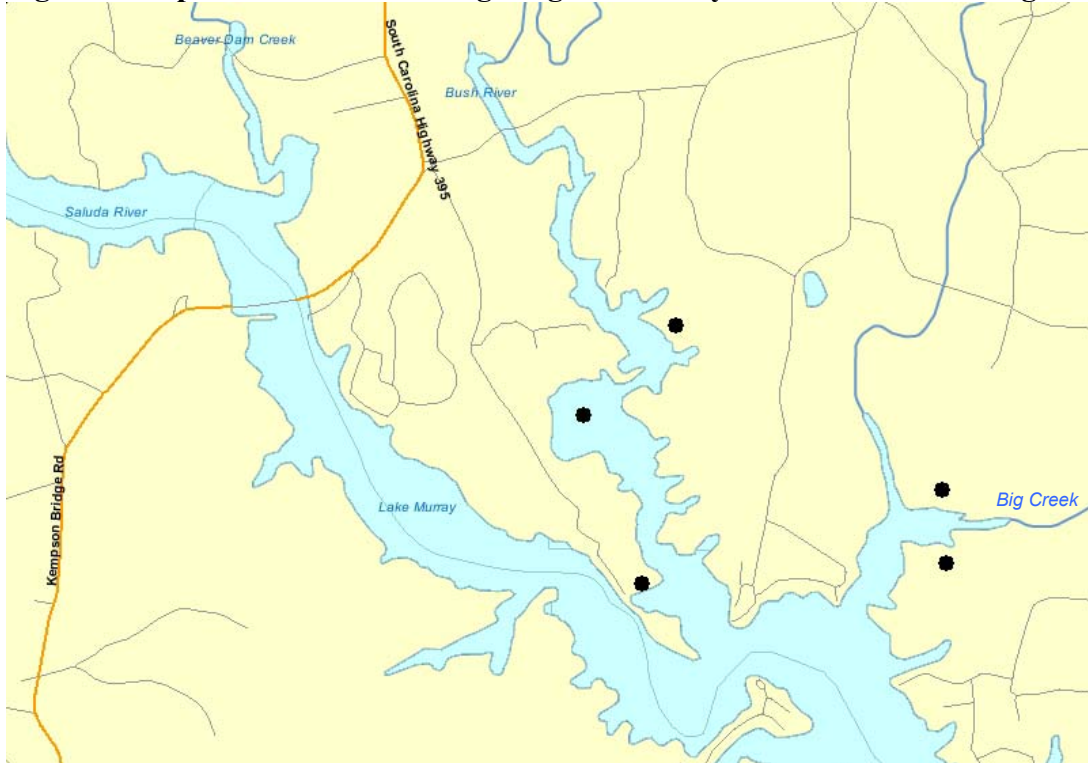
**Aircraft:** Fixed-Wing Cessna 210      **Survey Duration:** 1300 – 1415 hrs

### Survey Observations

The survey crew departed the SC Avionics Facility at Columbia Metropolitan Airport at approximately 1300 hrs. The survey traversed the Lower Saluda River, from the confluence to the Saluda Hydro Dam, and the lower portion of Lake Murray, with the survey crew remarking on the lack of stork habitat in the vicinity. According to the USGS gauge (Lake Murray near Columbia, SC), the reservoir elevation at the time of the survey was 349.9 ft.

The survey crew also examined several sites along Bush River and Big Creek where foraging storks have been reported by a local resident for approximately the past three years (See Figure 1). However, no storks were observed at these sites.

**Figure 1: Reported Wood Stork Sightings in Vicinity of Bush River and Big Creek**

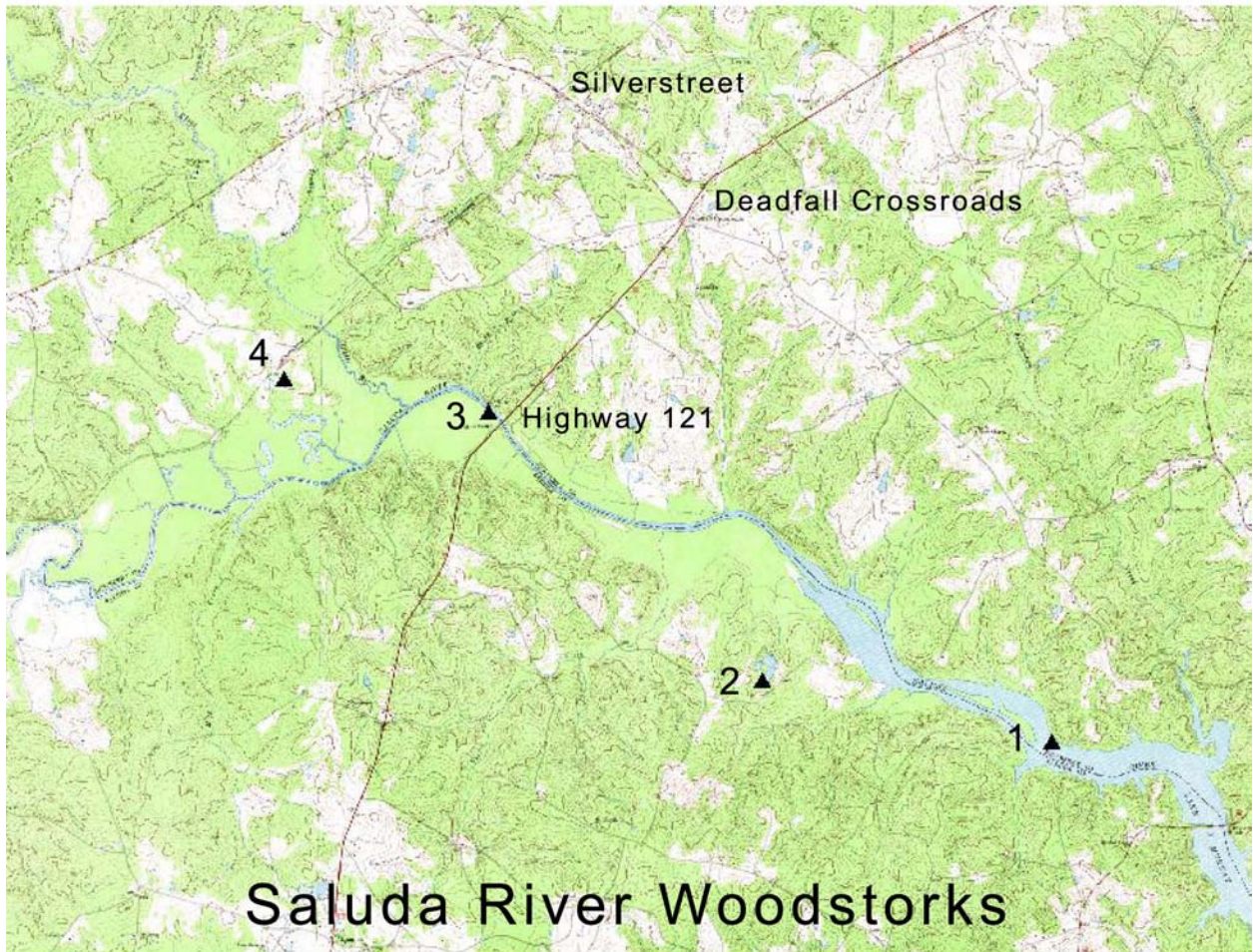


## Wood Stork Aerial Survey Trip Report

### Lake Murray and Saluda River August 27, 2004

The remainder of the survey focused on the extreme upper end of Lake Murray and upstream in the middle Saluda River. Four sites where foraging wood storks were previously observed by Tom Murphy on 8/4/04 were examined (See Figure 2). Approximately 60 wood storks were observed foraging on exposed mudflats within the project boundary upstream of Beaverdam Creek on the Saluda River (See Point 1 - Figure 2). Several passes were made to confirm that the birds were wood storks, photograph the birds (See Figure 3), and obtain a more accurate count of the number of birds.

**Figure 2: Saluda River Wood Stork Locations Provided By Tom Murphy (SCDNR)**





## Wood Stork Aerial Survey Trip Report

### Lake Murray and Saluda River August 27, 2004

**Figure 3: Wood Stork Feeding Assemblage Observed Upstream of Beaverdam Creek**



The potential nesting area (See Point 4 – Figure 2; also See Figure 4), originally identified by Tom Murphy on 8/4/04, was also examined as part of the survey. Approximately 12 nests were observed in a small forested wetland (old clay pit) located in the floodplain of the middle Saluda River, south of Silverstreet, and adjacent to International Paper’s wood chipping facility (See Figure 5). The nests appeared to be wood stork nests, but no storks were observed in the vicinity at the time of the survey. It should be noted that approximately 20 storks were observed standing on the nests and roosting in the vicinity of the nests when they were first located on 8/4/04; however, none appeared to be freshly-fledged juveniles.

The survey examined another potential nesting site in the Saluda River floodplain near the mouth of Tosity Creek, which was initially located by Bucky Harris (SCDNR Pilot) during a flight on approximately 8/25/04. Approximately 10 nests were observed in two adjacent forested wetlands (See Figure 4). The nests appeared to be wood storks nests; however, no storks were present at the site, and it was noted by Tom Murphy that they could potentially be great blue heron nests. GPS coordinates for the two potential nesting areas are provided in Table 1.

**Table 1: Latitude and Longitude of Potential Wood Stork Nesting Locations**

	Latitude (Deg. / Dec. Min.)	Longitude (Deg. / Dec. Min.)
Silverstreet Site	34 11.20	81 45.28
Tosity Creek Site	34 10.19	81 42.19

# Wood Stork Aerial Survey Trip Report

Lake Murray and Saluda River  
August 27, 2004

Figure 4: Potential Wood Stork Nesting Sites on the Middle Saluda River

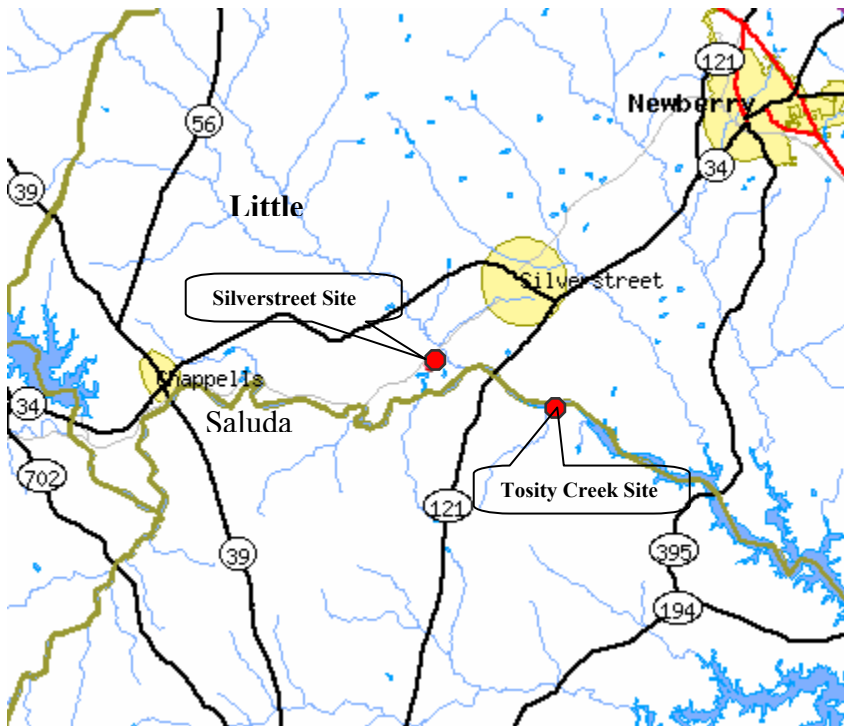


Figure 5: Aerial Photo of Potential Wood Stork Nesting Site Near Silverstreet, SC



# Wood Stork Aerial Survey Trip Report

## Lake Murray and Saluda River August 27, 2004

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### Summary

Approximately 60 wood storks were observed foraging on exposed mudflats within the Saluda Project Boundary upstream of Beaverdam Creek (See Point 1 - Figure 2). This observation, combined with other sightings of feeding assemblages throughout the middle Saluda Basin, suggests that wood storks are readily using a wide range of habitats in the basin for foraging. The storks observed feeding within the project boundary were feeding on mudflats exposed by the Lake Murray drawdown. It remains unclear at this time whether storks will utilize the lake as a foraging area once the lake has returned to full pool elevation. Tom suggested follow-up surveys next year to determine if storks are utilizing the lake for foraging after it is returned to full pool.

Two potential nesting sites were examined during the survey, one just south of Silverstreet and the other along the Saluda River near Tosity Creek (See Figure 4). At the Silverstreet site, approximately 12 nests resembling wood stork nests were observed; however, no storks were present at the time of the survey. When the nests were initially located on 8/4/04, several storks were observed standing in the nests and roosting nearby; however, none appeared to be newly-fledged juveniles. The Silverstreet Site is not located within the Saluda Project Boundary.

Approximately 10 nests were located at the Tosity Creek site. The size, structure, and location of the nests were typical of wood storks; however, no wood storks were observed in the vicinity and it was noted that they could potentially be great blue heron nests. Based on initial field observations, the Tosity Creek site appears to be located within the Saluda Project Boundary.

Some uncertainty remains as to whether the observed nests were wood stork nests, and if so, whether nesting was successful at the Silverstreet and Tosity Creek sites. In discussions with Tom Murphy, it was suggested that a similar survey be conducted during next year's nesting season to determine whether reproduction is taking place at these locations.

**ATTACHMENT B**

**Meeting Minutes from September 17, 2004, Conference Call with SCDNR and  
USFWS**

**Saluda Hydro Project – Meeting RE August 27, 2004 Wood Stork Reconnaissance  
Survey**

**Via Conference Call – September 17, 2004**

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**Attendees**

Ed Eudaly	USFWS	Tom Murphy	SCDNR
Randy Mahan	SCANA Services	Kristina Massey	SCE&G
Tom Eppink	SCANA Services	Tommy Boozer	SCE&G
Van Hoffman	SCE&G	Bill Argentieri	SCE&G
Shane Boring	Kleinschmidt	Alan Stuart	Kleinschmidt

**Action Items**

**Due Date**

- Incorporate comments from 9/17/04 conference call into report and distribute to group.  
Shane Boring October 12, 2004
  
- Draft study plan based on recommendations from 9/17/04 conference call and distribute to group for review and comment.  
Shane Boring October 13, 2004

**Meeting Notes**

*These notes summarize the major items discussed during the meeting and are not intended to be a transcript or analysis of the meeting.*

Shane opened the meeting at 10:00 AM and noted that the focus of the meeting would be to discuss: (1) the trip report from the 8/27/04 wood stork aerial reconnaissance survey, (2) future wood stork monitoring needs on Lake Murray, and (3) FERC's order to designate two areas in the Brushy Creek and Bush River areas as "conservation areas" for wood storks.

**Comments on Reconnaissance Survey Trip Report**

The group found the report generally acceptable. Ed Eudaly asked that the reservoir elevation be added to the Survey Observations portion of the report in order to provide as much pertinent background information as possible.

Shane asked Tom Murphy to clarify whether the storks reported feeding along Brushy Creek and Bush River (See Figure 1 of report) had been observed by SCDNR staff or had been reported by private individuals. Tom indicated that Mr. Joe Harris (a local resident) had observed and documented storks feeding at these locations intermittently over an approximately three-year-long period. Randy Mahan noted that SCE&G staff had a meeting scheduled with Mr. Harris on October 4 to discuss these observations.

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Van Hoffman noted that the two locations where potential nests were observed (See Figure 4) were located in backwater areas approximately 500 -600 feet off the main river channel and that these areas are more influenced by operations at Lake Greenwood (Buzzard's Roost) than by the Lake Murray pool. He added that the location where storks were observed feeding during the survey (Point 1 on Figure 2) is in the vicinity of where the riverine habitat (influenced by Buzzard's Roost) begins to give way to more lacustrine habitats influenced by the Lake Murray pool.

*Future Monitoring Needs*

Tom and Ed both noted the need for a longer-term study (possible 3-7 years) to document where and under what conditions storks are using Lake Murray. The group identified several objectives for the study including the following:

- Documentation of nesting (i.e., whether the nests observed during 2004 were in fact stork nests), and if so, if successful reproduction is taking place.
- Documentation of foraging habitat and roosting areas, in particular, documentation of important night roosts (if they exist in the area).
- Examination of foraging conditions over multiple years and a range of water levels.
- Documentation of usage by various age classes (i.e., young-of-year, immature, adult).
- Examination of the influence of the Lake Murray drawdown on the presence of storks in the area.

The group briefly discussed the possibility of additional surveys during 2004, but decided that it would be better to begin surveys in March 2005 (when the birds begin returning to SC for the nesting season) and focus the remainder of this year on putting together a solid study plan. The group agreed upon the following study plan components:

- Monthly aerial surveys beginning in late-March and continuing through October each year.
- Ground surveys as necessary based on aerial observations (i.e., to confirm nesting, presence of young-of-year or pre-flight juveniles, presence of night roosts, etc.)
- A defined geographic and temporal scale.

Shane Boring agreed to draft a proposed study plan as outlined above and distribute the group for review as soon as is practicable.

Kristina Massey suggested, and the group agreed, that the preliminary result of the first two years of the study should be compiled in a report for inclusion with the Saluda Hydro FERC license application. The group also agreed that a brief annual report should be issued, followed by a conference call with the agencies to discuss the progress

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of the study and need for potential modifications to the scope. Shane and Tom agreed that a brief e-mail update could be issued following each survey flight.

*Potential Designations of Conservation Areas in response to the Shoreline Management Plan FERC Order*

Randy Mahan provided a brief explanation of FERC's Shoreline Management Plan order (dated 06/24/04), specifically, Item H dealing with consultation with the agencies regarding wood storks. Randy explained that Item H required SCE&G to consult with the agencies and to develop a plan to provide protection for areas where wood stork foraging and roosting has been documented. Randy indicated that consultation efforts are underway and that SCE&G proposes to temporarily designate these areas as Environmental Research Areas. Randy indicated that, under SCE&G's proposal, consultation efforts and protection of the areas would continue through the duration of the long-term study outlined above. He added that this would allow for evaluation of the influence of the Lake Murray drawdown on usage of the project area by storks (i.e., whether they will be present in significant numbers at normal reservoir elevation) and an appropriate long-term designation. Alan queried Tom Murphy and Ed as to whether this approach seemed logical and whether their agencies would support SCE&G's efforts in this regard. Ed and Tom were both of the opinion that SCE&G's proposal sounded like a reasonable approach and one that their respective agencies could support.