

**Action name:** Recreational Instream Flow Study **Prerequisite Actions:** none

**Action Description:**

Conduct recreational instream flow studies of the Nantahala River bypass from about 1 mile above the White Oak Creek confluence to the Nantahala Powerhouse; of the Lake Glenville bypass from the reservoir to the Thorpe Powerhouse; of Wolf Creek and Tennessee Creek; of East Fork Tuckasegee River below Cedar Cliff Powerhouse; of the West Fork Tuckasegee River below Tuckasegee Powerhouse; of the Tuckasegee River from the confluence of the East and West Forks to Dillsboro; and of the Tuckasegee River below Dillsboro to Bryson City.

**Applicable Hydro Projects/Developments:**

Nantahala, Thorpe, Tuckasegee and Cedar Cliff Projects.

**I. Objective**

The study objective is to determine the flows needed to provide acceptable and optimal recreation experience for boaters and anglers of various experience levels.

**II. Basis**

The basis for the study is a result of 18 CFR Ch. 1 §2.7 Recreational development at licensed projects.

**III. Geographic and Temporal Scope**

The geographical study area will include the bypass section of streambed below the Nantahala dam from about 1 mile above the confluence of the Nantahala River and White Oak Creek to the Nantahala Powerhouse for boating and the entire bypass section for angling; from below Lake Glenville Reservoir to Thorpe Powerhouse; of Wolf Creek and Tennessee Creek; of the East Fork Tuckasegee River below the Cedar Cliff Powerhouse; and of the West Fork Tuckasegee River below the Tuckasegee Powerhouse; and the Tuckasegee River from the confluence of the East and West Forks to Bryson City. The studies will take place during an appropriate time to release the flows.

**IV. Approach and Analysis**

The study approach on all of the river sections will use a variety of watercraft and angling methods (bait, lures and flies). At the same time we will be looking at the Aesthetics study.

The study team will consist of representatives from various state and federal agencies, private boaters, outfitters, anglers and Duke Power. The field component of the study will first involve looking at the river sections to determine if they warrant further study. The second step would be to boat and fish the sections, not eliminated after the visual inspection, at different flows over a two or three day period. The mainstem Tuckasegee reaches may be handled by controlled flow studies on selected sections, rather than boating the entire length each time. All of the field work will be completed during the week from Tuesday to Thursday. After each run or flow, each participant will be required to complete a survey rating various recreational characteristics for that trip or angling experience. The total river flow for each trip will be measured or calculated.

Video documentation will take place for selected locations of each study reach at every study flow. Camera placements will be scouted well ahead of the study with input from the participants team, and used consistently at all flows. Particular emphasis will be placed on areas that are most responsive to changes in flow.

Surveys used previously for the Nantahala River and Cheoah River will serve as starting points for developing site specific surveys for this effort. The organizations listed in the Participants section will work cooperatively to assemble the study team, develop the flow evaluation survey for each reach, determine what range of flows to evaluate and assure the appropriate safety plans have been developed.

The analysis of the surveys will be tabulated for each flow. The knowledge and experience of the recreation user groups will be used to recommend flows for each river section that provide particular levels of recreation experience that are boated or fished. Recommended flows will not be absolute minimum flows, but will be flows that allows an acceptable recreation experience. The angling studies will be conducted a baseflows, one or two angling flows between baseflow and boating flows and at the boating flows. This study will be coordinated with other studies to consider water temperature, sediment movement, etc.

## V. Schedules and Required Conditions

The study will need to be conducted for the Tuckasegee River when the lakes are full and before the recreational season begins. The flow studies for the Tuckasegee River will be scheduled for spring or early summer 2001. The flow study for the Nantahala bypass will take place from the last week in September to the first week in October in order to protect the trout population from warm water releases from Nantahala Dam and the NCWRC stocking periods can be taken into account. The flows will be calculated using rating gages for the tainter gates located at each dam or by known turbine discharges from the powerhouses. Because of intervening drainage areas and tributary inflows, determining the actual flows in the mainstem Tuckasegee River reaches may require actual in-channel flow measurements. These might be coordinated with data collection efforts for other studies. After considering various needs for discharge data, temporary measuring devices at a selected location(s) may be preferred.

## VI. Results

The results expected from this study will be a determination of the flows that can be made from the projects and their suitability for the different gear and skill levels of boaters and anglers that use the rivers below the projects.

## VII. Participants

	<b>Organization</b>	<b>Name</b>	<b>Phone #</b>	<b>E-Mail</b>
<b>NP&amp;L Lead</b>	Duke Power	Chuck Borawa	704-382-8587	cborawa@duke-energy.com

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<b>Supporting Consultant</b>	Duke Power	Bunny Johns	828-488-8539	Bunnyjohns@yahoo.com
<b>Other Participants</b>	USFS	David Wright	828-257-4256	Dwright@fs.fed.us
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	NGO	Shane Williams	828-277-3620 W	Swilliams@email.wcu.edu
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### VIII. Expected Benefits

The benefits of this study will provide Duke with information on the best way to utilize the water resources for the generation of power while accommodating recreational use on the rivers below the projects.

### IX. List of Attachments

### X. List of References