

**PROGRESS ENERGY
YADKIN-PEE DEE RIVER PROJECT
WATER RESOURCES WORKING GROUP
ISSUES EVALUATION TEMPLATE
January 2004**

Issue No. 5: Evaluate the relationships between Project operations/hydraulics and aquatic habitat, water quality, and fish migrations

1. Description of Issue

The influence of Project operations and resulting hydraulic effects (flow timing, magnitude, and duration) on aquatic populations and associated habitat, resident/diadromous fish migrations, and recreational/navigational activities has been identified as an issue. It has been suggested that hydraulic effects may include daily, weekly, seasonal, and/or annual fluctuations in the river reaches below the power plants. Additionally, the effect of Project operations on water quality characteristics (e.g., dissolved oxygen) was identified as a potential concern.

2. Project Effects

The operations of Tillery and Blewett Falls hydroelectric plants result in flow fluctuations in the downstream river reaches. The hydraulic effects involve the timing, magnitude, and duration of flow releases from each power plant. Flow alterations by hydroelectric projects may occur over and include daily, weekly, seasonal, and/or annual time scales. However, the usable storage capacity of the Tillery and Blewett Falls reservoirs is small compared to normal river flows and is not sufficient to alter seasonal or annual flow volumes.

Power plant operations may influence water quality characteristics in downstream tailwaters. The most notable effect would likely be fluctuations in dissolved oxygen concentrations during the summer months when reservoir stratification and hypolimnetic anoxia conditions may be present. Tailwater water quality is influenced locally by power plant operations with tributary inputs (e.g., Rocky River) playing a more significant role in influencing water quality with increasing distance downstream of each power plant. This Project effect is addressed under Issues No. 7 and 8.

3. Applicable Existing Information

U.S. Geological Survey (USGS) gage data exists for the river reach below the Blewett Falls Development, which will permit thorough examination of flow alterations and fluctuations relative to power plant operations and delineation of downstream Project effects. Flow and gage height records exist at four locations: (1) Rockingham, North Carolina; (2) Bennettsville, South Carolina; (3) Pee Dee, South Carolina; and (4) below Pee Dee, South Carolina. Gage height data exists for the Bucksport, South Carolina gage. No USGS gage data exists for the mainstem below the Tillery Development; however, gage data does exist for the major tributaries—the Rocky and Little Rivers. Generation discharge records are available for both power plants. Some flow and power plant operation information have been presented in the Progress Energy ICD¹, published in February 2003.

Progress Energy has also collected limited preliminary, reconnaissance hydraulic data during the 2000-2001 period at cross-section transects located in both river reaches. This information was

collected over a range of flow conditions and along several areas of each reach. These data will be available for review by the instream flow subgroup.

4. Study Needs

Progress Energy proposes to conduct an instream flow study for each river reach. An instream flow subgroup, comprised of interested RWG participants, was formed during June 2003 to define: (1) the type of instream flow study necessary for each river reach; (2) study goals and objectives; and (3) study parameters. The goals and objectives of each flow study should be consistent with identified state and federal fishery management plans for the river. The study will also address recreational use of both river reaches and the navigation use of the river reach below the Blewett Hydroelectric Plant (see Issue No. 3: Effects of Project Operation on Recreation under the Land Use and Recreation RWG). A field-reconnaissance scoping trip was performed July 28 to 30. Study scoping and aerial habitat mapping is expected to be complete in 2003 with the majority of field studies conducted in 2004.

The effects of instream flow on resultant water quality will be addressed under Water RWG Issues No. 7 and 8.

Resource Working Group Overlap (check if applicable)

Water Resources Issues # 1, 6, 7, and 12

Land Use and Recreation Issue # 3

Terrestrial Resources Issue # ____

¹ Progress Energy. 2003. Initial consultation document. Yadkin-Pee Dee River Project. FERC No. 2206. February 2003. Submitted by Progress Energy, Raleigh, North Carolina.