

**STUDY PROGRESS REPORT
WATER RESOURCES
MORGAN FALLS PROJECT (FERC NO. 2237)**

NOVEMBER 2005

1. INTRODUCTION

Georgia Power is conducting a study to characterize existing water resources in the Chattahoochee River at the Morgan Falls Project (including water use, availability, and water quality) and developing information for analyzing the potential effects of continued project operation on water resources. The study is being conducted according to the study plan for the Morgan Falls Project approved by the Federal Energy Regulatory Commission (Commission) on November 26, 2004. The results of the study will be presented in a Water Resources Study Report, which Georgia Power will distribute to participants and file with the Commission by April 1, 2006. Georgia Power will use the information generated by the study to evaluate the environmental effects of its proposed project in the Preliminary Licensing Proposal, to be filed with the Commission by October 2, 2006.

The specific objectives of the Water Resources Study are to:

- Characterize water use, availability, and water quality in the Morgan Falls Project study area.
- Characterize the effects of the Morgan Falls impoundment on summer water temperatures within the impoundment and immediately downstream of the project as they relate to the capability of cold, hypolimnetic releases from upstream Buford Dam to sustain stocked trout year-round in the reach below Morgan Falls.
- Review abundant water resources information and data available for the Chattahoochee River, along with findings of Georgia Power's water quality monitoring in the project waters, to evaluate the effects of continued project operations on water quality and quantity in conjunction with various other water uses and operations on the river.
- Characterize the benefits of Morgan Falls operation for protecting drinking water uses and downstream water quality and quantity in the Chattahoochee River for metropolitan Atlanta.

2. STUDY PROGRESS

2.1 Activities Completed

Quarterly Water Quality Monitoring

- Conducted quarterly water quality monitoring in the project impoundment on February 17, May 31, August 10, and November 5, 2005. Monitoring included vertical profile measurements at four locations and analysis of 22 water chemistry parameters in surface grab samples collected near the dam.
- Began compiling quarterly monitoring results from 2003, 2004, and 2005 into a database for summary and analysis.

Continuous Water Temperature Monitoring

- Consulted with Georgia Department of Natural Resources Wildlife Resources Division (WRD) on selecting specific locations for placement of water temperature monitoring data loggers. WRD concurred with the placement of data loggers.
- Collected half-hourly water temperature data at 13 locations in the project area between May 1 and October 31, 2005, using StowAway® TidbiT temperature data loggers. Locations monitored are listed below:

Location Designation	Description
M1	Chattahoochee River upstream of Morgan Falls impoundment
M2	Main channel of impoundment upstream of Big Creek
M3	Main channel of impoundment downstream of Big Creek
M4	Main channel of impoundment upstream of Willeo Creek
M5	Main channel of impoundment downstream of Willeo Creek
M6	Main channel of impoundment upstream of Sullivan Creek cove
M7	Main channel of impoundment downstream of Sullivan Creek cove
M8	Morgan Falls tailrace
T1	Big Creek
T2	Willeo Creek
T3	Jackson Lake on Willeo Creek Branch
F1	Shallow flat opposite Willeo Creek
F2	Shallow flat/embayment within Sullivan Creek cove

- Obtained concurrent continuous temperature monitoring data, discharge data, and rainfall data from U.S. Geological Survey (USGS) for 23 gages located upstream, downstream, within, and in tributaries to the project area.
- Developed a comprehensive database of continuous water temperature monitoring data collected by Georgia Power and concurrent data collected by USGS.
- Compared temperature and water level data, and relationships between water elevation and estimated bottom elevation at individual data loggers

to determine if devices placed in shallow locations may have become dewatered and exposed to air temperatures. These data will be retained in the database but excluded from any further analysis.

- Began querying comprehensive database to examine trends in water temperature change through project area and to identify maximum temperature periods for closer examination and analysis.
- Analyzed main channel and embayment areas for reservoir storage and surface area based on the 2001 hydrographic survey and bathymetry map prepared by U.S. Army Corps of Engineers.

2.2 Preliminary Findings

- Data compilation and analysis are ongoing.

3. VARIANCE FROM STUDY PLAN AND SCHEDULE

- There has been no substantive variance to date from the study plan or schedule. Minor adjustments were made to monitoring locations as described below.
- Based on preliminary monitoring results in fall 2004, and with the concurrence of WRD, monitor M7 upstream of the powerhouse was not deployed at the beginning of the 2005 season because it was redundant of another monitoring location. In fall 2004, M7 had consistently matched temperature data recorded by tailrace monitor M8. Monitor M7 was re-deployed from September through October 2005 to provide additional comparative data with M8.
- Inspection of continuous temperature and water level data in August 2005 revealed that monitor M4 on the mainstem channel of the project impoundment periodically became dewatered (exposed to air temperatures) due to water level fluctuations. An alternate monitor M4A was installed nearby in a deeper portion of the channel in October 2005 to avoid exposure of the data logger.

4. REMAINING ACTIVITIES

- Compile and complete analysis of quarterly water quality monitoring data for the project impoundment collected from 2003 through 2005.
- Complete database of continuous water temperature monitoring data and concurrent USGS data collected between July 2003 and October 2005.
- Complete literature review of relevant water resources information and data available for the Chattahoochee River since preparation of Georgia Power's Pre-Application Document.
- Complete analysis of water quality and water temperature monitoring data relative to: applicable water quality criteria; trends in water temperature changes across the impoundment before, during, and after summer rainfall events and associated interactions between Buford Dam releases, tributary inflow, and the contribution of shallow flats in Morgan Falls impoundment;

and effects of project operations on water quality and quantity in conjunction with the operation of Buford Dam and existing water withdrawals.

- Prepare the Water Resources Study Report.