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GEORGIA TECH RESEARCH

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RESEARCHERS GO WITH THE FLOW IN GEORGIA TECH HYDRAULICS LAB

Dr. Martin 2224 843-1520

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In a warehouse-sized laboratory at the Georgia Institute of Technology, Dr. Sam Martin watches currents of bright red dye drifting through a blue "river."

Although it looks like an amusement park ride, the river model is used for serious business -- to demonstrate how changing water levels impact the performance of a major power plant.

By tracking the progress of the red dye, researchers gather information about flow speeds and sedimentation movement in the Savannah River. A second model of the power facility represents intake pumps subjected to fluctuating river levels, said Martin, a civil engineering professor.

The facility being studied is Plant McIntosh -- a 170,000-kilowatt, coal-fired plant operated by Savannah Electric and Power Company, a subsidiary of The Southern Company. Martin's research will help refine a conceptual plan for improving the McIntosh water intake system. The new design should provide a permanent solution to changing river levels, a company spokesman said.

In 1986, drought conditions caused the Savannah River to drop, the spokesman explained. Intake pumps at the McIntosh plant weren't pulling in enough water. To push more water toward the intake system, a dam and auxiliary pumps were erected outside the plant, but the solution was only temporary. A permanent structure is currently being designed by Southern Company Services, the engineering and technical subsidiary of The Southern Company.

Before building a new system, Savannah Electric wanted to make sure it would perform well at various river levels. So Martin's research team set up two models in the Georgia Tech Hydraulics Laboratory, to test and modify the conceptual design.

Built on a 1-to-40 scale, the first model represents the Savannah River near the McIntosh plant, and it contains about 1/10,000th of the actual river flow. A second model, designed on a 1-to-10 scale, consists of two siphons that act like water intake pumps, allowing researchers to experiment with water levels between 4 feet and 13 feet.

Georgia Tech's Hydraulics Lab is equipped for large-scale flow studies. Water flumes are used to assess the capacity of dams and other structures. Researchers chart the direction and force of flow to predict the performance of structures subjected to flood conditions. The Southern Company is the Atlanta-based parent firm of five electric utilities in the southeast.

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