Report as of FY2006 for 2006IN187B: "Wireless Monitoring of Purdue’s Constructed Wetland"

Publications

Project 2006IN187B has resulted in no reported publications as of FY2006.

Report Follows

IWRRC Report

Title: Wireless Monitoring of Purdue's Constructed Wetlands

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Funding Period: March 1, 2006 – February 28, 2007

Problem: "The purpose of this proposal is to request funds for the purchase of water quality monitoring instrumentation and wireless routers to be installed at Purdue's constructed wetlands and maintained by Purdue University undergraduate students enrolled in the EPICS course: Constructed Wetlands/Water Quality."

Research Objectives: This projects focus is on: (1) employing innovative wireless continuous monitoring strategies for assessing water quality at remote locations, (2) training undergraduate students in sensor and wireless technologies as they relate to environmental assessment and protection, and (3) leveraging project infrastructure and results to attract additional resources to the State of Indiana to monitor environmental parameters at a broader scale (i.e., watershed level).

Methodology: Monitoring hardware and instrumentation was purchased in late spring of 2006, and arrived in the middle of the Fall semester. This was too late in the semester for undergraduate student involvement. However, in the Spring semester, the instruments were set-up and evaluated within the laboratory, testing the probes and wireless communication software and hardware. During this time, it was decided to install the monitoring equipment on the Wabash River rather than at the constructed wetlands. A suitable location on the river was identified, with this location being a pedestrian bridge approximately 4 miles Northeast of Campus - at the Davis Ferry Bridge, part of the Wabash Heritage Trial owned by Tippecanoe County. In Fall 2006, a consent to encroach was approved by the County Commissioners to install a 4 inch pipe from the bridge through which cables and tubing could be encased for monitoring the river. The hardware will be installed this summer (2007) by a graduate student in Civil Engineering with the help of a SURF (summer undergraduate Research Fellowship) student, who is working on the project over the summer. In the Fall semester (2007), students in EPICS will maintain the site, and work on software to display the data on the class webpage.

Principal Findings: None to date.

Summary: Instrumentation has been purchased to monitor several water quality parameters within a local water body. Initially, the water quality station was to be deployed at a local constructed wetlands; however due to local interest in the Wabash River, the station will be deployed on a pedestrian bridge near Lafayette IN. Parameters to be measured include: dissolved oxygen, water and air temperature, water conductivity, turbidity, and pH. Students enrolled in a service learning course entitled: "Constructed Wetlands/Water Quality" have been working with the Tippecanoe County Soil and Water

Conservation District to implement the project. Students in the course have programmed the datalogger and designed the station for implementation in the field by this summer (2007).

Results and Significance There are no data to report at this time.

Major Conclusions There is no major conclusion at this time.

Publications See: http://epics.ecn.purdue.edu/cwwq/

Students: The service learning course EPICS: Constructed wetlands/Water Quality had an enrollment of 13 students in Spring 2007. Several of the students in this course worked on various aspects of this project, including analysis of grab samples for E. coli, suspended solids, and nitrate, and wireless communication. A graduate student in Civil Engineering has been worked with these students, and has designed and constructed the station to be installed on the pedestrian bridge. This summer (2007) a SURF (summer undergraduate Research Fellowship) student, has been working on final installation requirements for the station.