A Smart Illicit Discharge Monitoring System

Alexander Campbell
Kennesaw State University

Henry S. Armstrong
Kennesaw State University

Tien Yee
Kennesaw State University

First Year Research Program:

An Illicit Discharge Monitoring System

Alex Campbell, Professor Tien Yee, and Henry Armstrong

Department of Civil and Environmental Engineering, Kennesaw State University

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Abstract

In the present study, we attempt to use a variety of sensors to monitor illicit discharges that are present near the Kennesaw State University Marietta Campus. The US Environmental Protection Agency defines an illicit discharge as "any discharge into a storm drain system that is not composed entirely of stormwater". Each year, approximately 860 billion gallons of sewage spills are reported throughout the country. In Georgia, sewer spills data shows that spills may range from hundreds of gallons to millions of gallons depending on the severity of the leak. The undetected sewer leaks may degrade the water quality in nearby streams, therefore causing undesirable consequences. These consequences may include elevated fecal coliform levels, fish kills, and human health-related issues. Illicit discharges can come from innocuous runoff from a laundromat to malicious dumping of hazardous waste or anywhere in between. Current protocol in illicit discharge identification is done manually. The steps involved are tedious and time-consuming. It is clear that there exists a gap in detection of illicit discharges. In light of this, an automated system may provide much-needed help in timely detecting remediation of illicit discharges. To detect these illicit discharges, we assembled a cost-efficient system that utilizes 5 kinds of sensors. Sample water quality data collected from the system will be displayed through a website. A preliminary set of collected data will be shown during the conference presentation as a demonstration of working system.