

## REHABILITATION OF WASTEWATER COLLECTION AND WATER DISTRIBUTION SYSTEMS



### IMPACT STATEMENT

This research project will support the U.S. Environmental Protection Agency's (EPA) Sustainable Water Infrastructure goal of better management by expanding and accelerating the development, evaluation, and acceptance of innovative technologies for effectively extending the integrity and service life of aging and deteriorating drinking water and wastewater conveyance systems.

### BACKGROUND:

The nation's 54,000 drinking water systems and 16,000 wastewater systems are nearing the end of their useful life, and need to be replaced or repaired to operate successfully and comply with federal regulations. Rehabilitation is the application of infrastructure repair, renewal and replacement technologies in an effort to return functionality to a drinking water or wastewater system or subsystem. There are many promising rehabilitation methods and materials available in the market. For example, trenchless technologies have moved to the forefront of sewer system rehabilitation. Many are proprietary systems and the details of installation procedures and materials are trade secrets, limiting the ability to compare and evaluate competing approaches. Selection of rehabilitation methods and materials suitable for various parts of the wastewater collection and water distribution systems remains an issue, especially due to ever emerging new materials and methods of construction.

Uncertainty in the selection of appropriate repair and replacement techniques is partly related to the lack of understanding of the capabilities and costs of each methodology to solve the problem in the long term. Reliable rehabilitation product performance under actual field conditions, especially over longer periods of performance, is lacking. Data on the effectiveness and longevity of rehabilitation technologies, materials, and life-cycle cost information will be useful in determining whether replacement or rehabilitation is more cost effective.

### DESCRIPTION:

The National Risk Management Research Laboratory, of the U.S. Environmental Protection Agency's (EPA) Office of Research and Development, has funded this research project in support of its Aging Water Infrastructure (AWI) Research Program. This project consists of a comprehensive review and evaluation of existing and emerging rehabilitation/repair technologies. The project will select and prepare the appropriate technologies for controlled-condition testing and field demonstrations. The specific objectives of the project are to identify and characterize the current state-of-the-technology at the global level, including critical data and capability gaps, for the rehabilitation of drinking water distribution and wastewater collection systems; prepare protocols, metrics, and site selection criteria and selection of rehabilitation technologies and decision-support systems for subsequent controlled-condition; and field testing of innovative rehabilitation technologies and decision-support systems.

EPA GOAL: Goal #2 - *Clean & Safe Water*; Objective 2.1.1- *Water Safe to Drink*

ORD MULTI YEAR PLAN: Drinking Water (DW), Long Term Goal (LTG) - DW-2 *Control, Manage, and Mitigate Health Risks*; Water Quality (WQ) LTG - WQ-3 *Source Control*

RESEARCH PARTNERS: Battelle; Trenchless Technology Center of Louisiana Tech; Virginia Tech; and Jason Consultants

## **EXPECTED OUTCOMES AND IMPACTS:**

It is expected that this project will result in improved ability of water and wastewater utilities in selecting rehabilitation/repair technologies, reduced cost, and improved effectiveness of aging water distribution and wastewater collection systems.

## **OUTPUTS:**

The outputs from this research project will support the Agency's Sustainable Water Infrastructure goal of better management by expanding and accelerating the development, evaluation, and acceptance of innovative technologies for effectively extending the integrity and service life of aging and deteriorating water and wastewater conveyance systems. Current and expected project outputs include:

- State of the Technology Review Report (2009) EPA/600/R-09/048
- Report on the state of the technology for rehabilitating water mains
- Report on the state of the technology for rehabilitating wastewater collection systems
- Report on the state of the technology for rehabilitating force mains
- Report on the field demonstration of innovative rehabilitation technologies for wastewater mains

## **RESOURCES:**

Aging Water Infrastructure Research Program: <http://www.epa.gov/awi/>

Urban Watershed Management Research: <http://www.epa.gov/ednrmrl/>

EPA (2009). *Rehabilitation of Wastewater Collection and Water Distribution Systems - State of Technology Review Report* (EPA/600/R-09/048) <http://www.epa.gov/nrmrl/pubs/600r09048/600r09048.pdf>

## **CONTACTS:**

Ariamalar Selvakumar, *Principal Investigator* - (732) 906-6990 or [selvakumar.ariamalar@epa.gov](mailto:selvakumar.ariamalar@epa.gov)

Steven Doub, *Media Relations* - (513) 569-7503 or [doub.steven@epa.gov](mailto:doub.steven@epa.gov)

Michelle Latham, *Communications* - (513) 569-7601 or [latham.michelle@epa.gov](mailto:latham.michelle@epa.gov)



Drinking Water



Water Quality



Aging Water Infrastructure