Wastewater Collection Systems Research: An Update

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Aging Water Infrastructure Research Program

- State of the technology reviews for condition assessment and rehabilitation of wastewater collection systems
- Identified state of the technology practices as well as innovative and emerging technologies as candidates for field demonstration
- Used as a basis for discussions at International Technology Forums

Products:

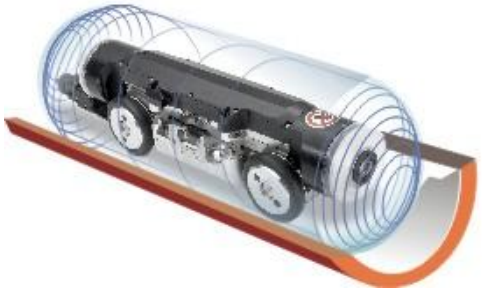
- Rehabilitation of Wastewater Collection and Water Distribution Systems- State of Technology Review Report, EPA/600/R-09/048, May 2009
- Rehabilitation of Aging Water Infrastructure Systems: Key Challenges and Issues, *ASCE Journal of Infrastructure Systems*, Vol. 18, No. 3, pp. 202-209, September 2012

Condition Assessment – State of the Technology

- Addressed technology selection considerations
- Evaluated screening methods and technologies
- Looked at a wide range of internal inspection, pipe wall integrity and external condition assessment technologies
- Summarized implementation and cost issues

Products:

- Report on Condition Assessment of Wastewater Collection Systems, EPA/600/R-10/101, August 2010
- Innovative Internal Camera Inspection and Data Management for Effective Condition Assessment of Collection Systems, EPA/600/R-10/082, April 2010



Rehabilitation – State of the Technology

- Emphasis is on trenchless technologies applicable to sewer mainlines, laterals, manholes
- Identifies nearly 100 different rehabilitation technologies
- Identifies some gaps between available technologies such as design procedures, appropriate QA/QC, etc.
- Addressed uniqueness of force main rehabilitation

Products:

- State of Technology for Rehabilitation of Wastewater Collection Systems, EPA/600/R-10/078, July 2010
- State of Technology Report for Force Main Rehabilitation, EPA/600/R-10/044, March 2010

Field Demonstration of Condition Assessment Technologies for Wastewater Systems

- Established and innovative technologies were demonstrated in KC, MO in 2010
  - Zoom camera, laser, electro-scanning, sonar, digital scanning and CCTV
- Hosted by Kansas City, MO Water Services Dept.
- 8 inch and 10 inch VCP; 54 inch and 72 inch RCP; approximately 8,000 feet of sewer pipe
- Emerging acoustical inspection technologies being demonstrated in Cincinnati
  - Two technologies being evaluated in “off-road” locations to determine pipe condition and cleaning requirements

Products:

- Field Demonstration of Condition Assessment Technologies for Wastewater Collection Systems, EPA/600/R-11/078

Retrospective Evaluation of CIPP Lining Technologies

- Conducted assessments of historic CIPP rehabilitation projects
  - Denver, CO
    - 25 year-old CIPP from 8” VCP sewer
    - 22 year-old CIPP from 48” brick sewer
  - Columbus, OH
    - 5 year-old CIPP from 8” VCP sewer
    - 21 year-old CIPP from 36” brick sewer

Products:

- A Retrospective Evaluation of Cured-in-Place Pipe (CIPP) used in Municipal Gravity Sewers, EPA/600/R-12/004, January 2012
- A Pilot Study for Retrospective Evaluation of Cured-in-Place Pipe (CIPP) Rehabilitation of Municipal Gravity Sewers, *Tunneling and Underground Space Technology (TUST)*

Safe and Sustainable Water Resources – Research Action Plan

- Decision support tools for utilities for the selection of system rehabilitation technologies and methods
  - long-term effectiveness, system performance, structural integrity, consequence of failure, and life-cycle cost (system renewal case study database – FY16)

- National database structure for life cycle performance assessment of water and wastewater rehabilitation technologies (retrospective evaluation database – FY14)

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Aging Water Infrastructure Research: Information and Products

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Questions?