Implementing an Acoustic Pipe Inspection Program Using the Sewer Line Rapid Assessment Tool
A Case Study on the City of Augusta

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Agenda

- Situation Overview
- Acoustic Inspection Technology
- Implementation Case Study
- Summary
Augusta Utilities Overview

- Founded 1822
- Combined operations with Richmond County in 1996
- Population Served 190,000
- 1,040 miles of sewer pipe
- Covers 280 square miles
- Under GA EPD Consent Order
Reason for selecting the SL-RAT

- Needed to get “outside the box” to meet the requirements of the Consent Order
- Needed to get a handle on SSO performance
- Hence, needed to get an overall snapshot of their system
- SL–RAT provided a simple low-cost solution
Situation Overview

Acoustic Inspection Technology

Implementation Case Study

Summary
Sewer Line Inspection Methods

- Manhole Inspection
- Push Camera
- Acoustic
- Zoom Camera
- CCTV/Robotic Camera
- Pipe Wall Defect Scanners
- Pipe Profiling / Robotic Multi-Sensor
Active Acoustic Pipe Inspection Background

- Patented technology
- Gravity-fed sewer focus
- Winner 2012 WEF Innovative Technology Award

- Over 3.0M feet inspected
- Rapid assessment helps better focus cleaning and CCTV resources
Acoustic Inspection Technology

How Does it Work?

Transmitter “Yells”

SL-RAT
Sewer Line Rapid Assessment Tool

Blockage

Receiver “Listens”
Visual Comparison

CCTV Blockage Assessment 10

CCTV Blockage Assessment 5

CCTV Robot was Able to Pass Through Root Fibers

CCTV Blockage Assessment 7

CCTV Blockage Assessment 2

CCTV Robot was Not Able to Pass Through Obstruction
Situation Overview

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Summary
How it was operationalized

- 2 SL-RAT’s
- Managed by Asset Management
- Run with 2 person crews per SL-RAT
- Averaging ~7500 feet/8 hour day per crew
- Plan out inspection areas based on tax-maps
- Combining with manhole inspection program
Results So Far...

- >4,500 segments inspected in ~9 months of work
- >9,000 manholes located and inspected
- >1 MILLION Feet (197 miles)

Histogram of Acoustic Scores
Process flow

Print Maps & Give to Crew

1. Street Name
2. Parcel Address
3. Line Sizes

Conduct Inspections

Download SL-RAT

Create Base Report

Map Out in GIS

Generate Cleaning Crew Work Orders

Re-Charge SL-RAT

Close Out

7. QA Cleaning
6. Fix GIS Issues
5. Update Records
4. Schedule Next Inspection

Situation Overview

Acoustic Inspection Technology

Implementation Case Study

Summary
1. The SL–RAT is simple, reliable, and easy to use
2. Keep up with the data – DAILY! Backlogs can get overwhelming
3. Forces discipline in visiting every manhole – identify issues, update GIS records, etc
4. Has focused efforts on the 39% of segments that are Poor or Fair
5. Requires teamwork to achieve full potential – cleaning crews, GIS, inspection crews – must all work together
6. Future plans include conducting post–cleaning QA
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