InfoSense, Inc
Innovating Acoustic Inspection Technology™

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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Augusta
GEORGIA

Agenda

▸ Situation Overview

▸ Acoustic Inspection Technology

▸ Implementation Case Study
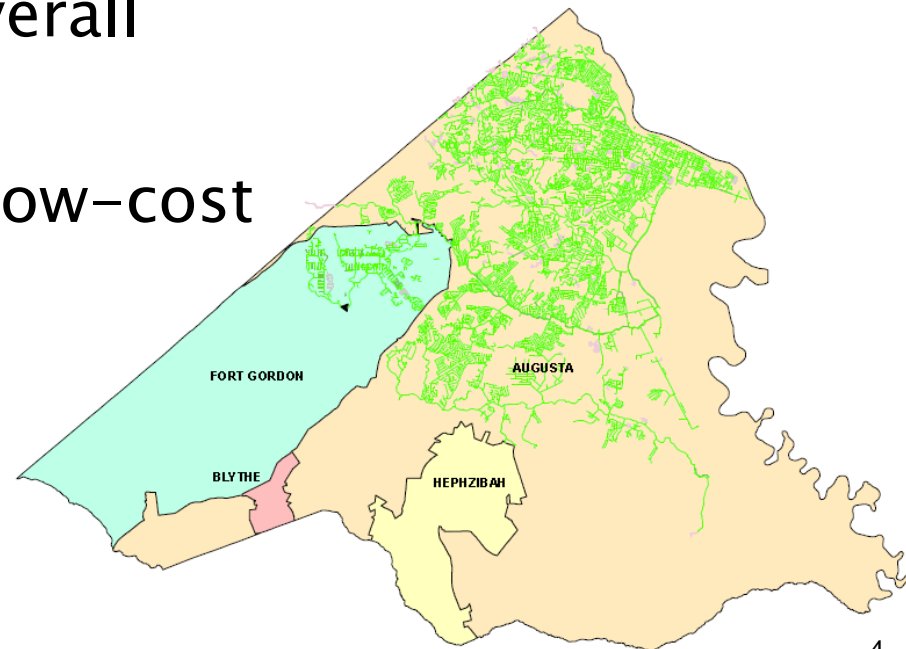
▸ Summary

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

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AUGUSTA

BLYTHE

HEPHZIBAH

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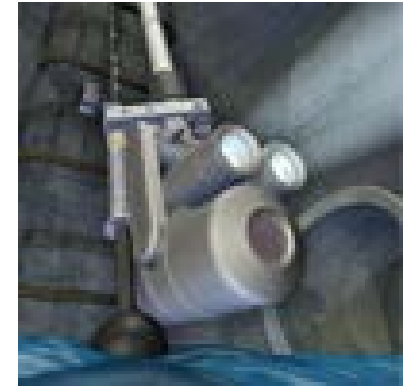# Sewer Line Inspection Methods

Manhole Inspection

Acoustic

Zoom Camera

Push Camera

CCTV/Robotic Camera

Pipe Wall Defect Scanners

Pipe Profiling / Robotic Multi-Sensor
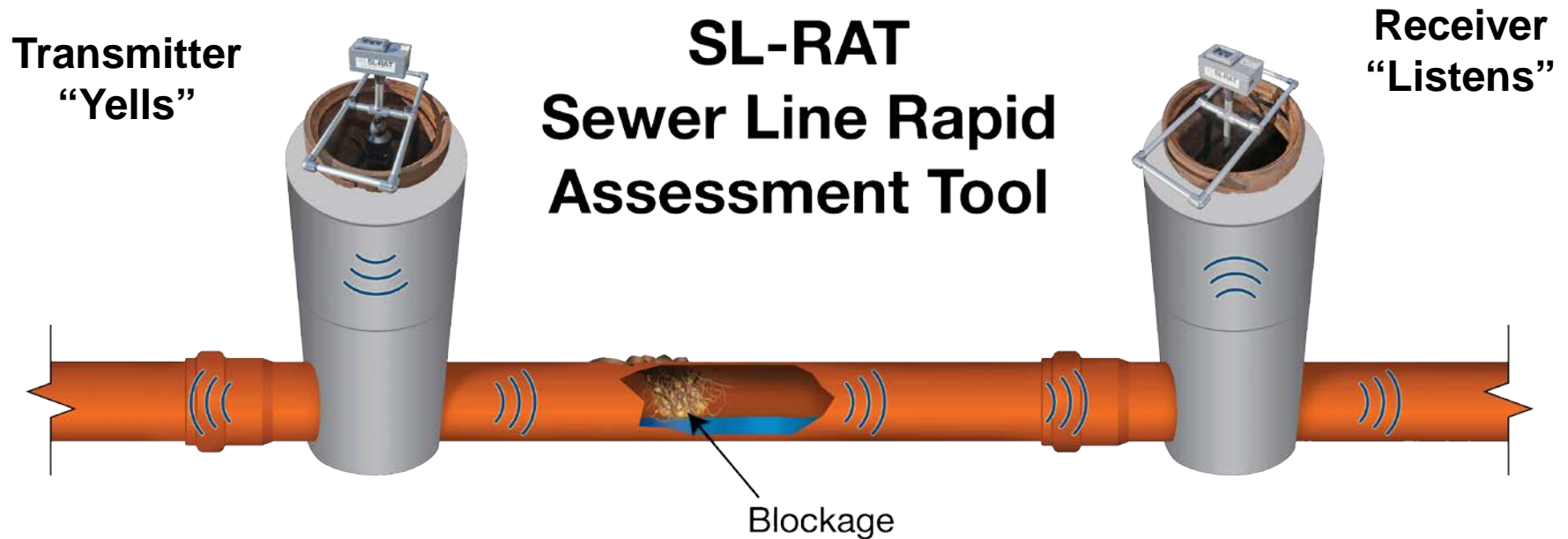
Active Acoustic Pipe Inspection Background

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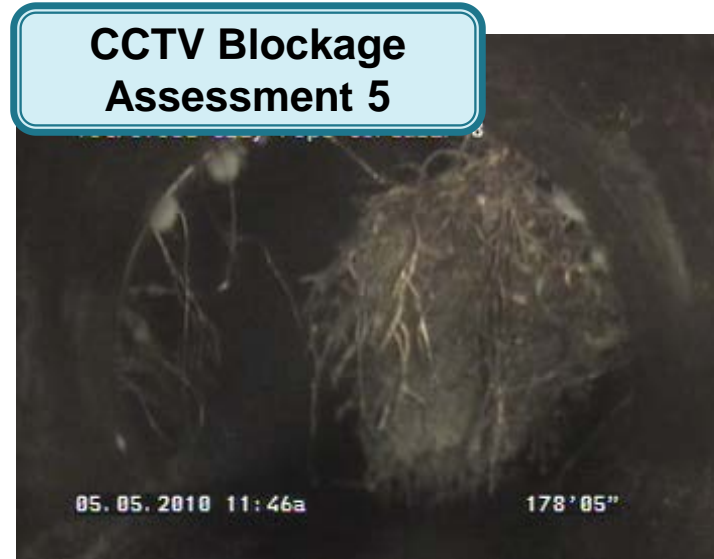- Gravity-fed sewer focus
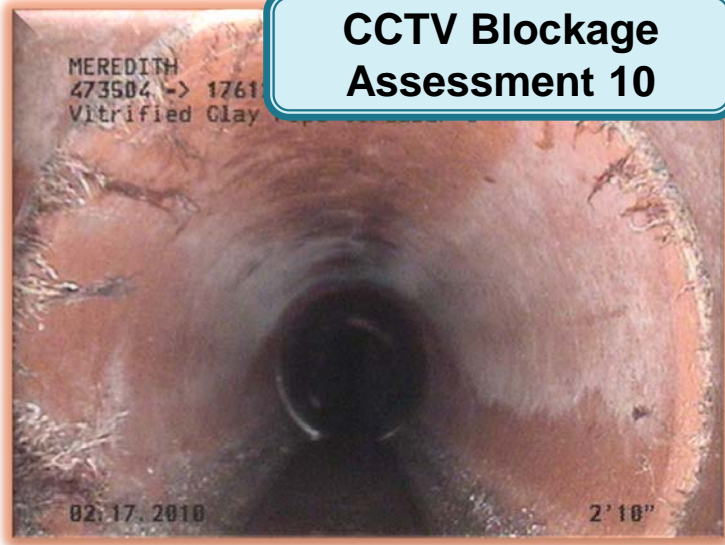- Winner 2012 WEF Innovative Technology Award

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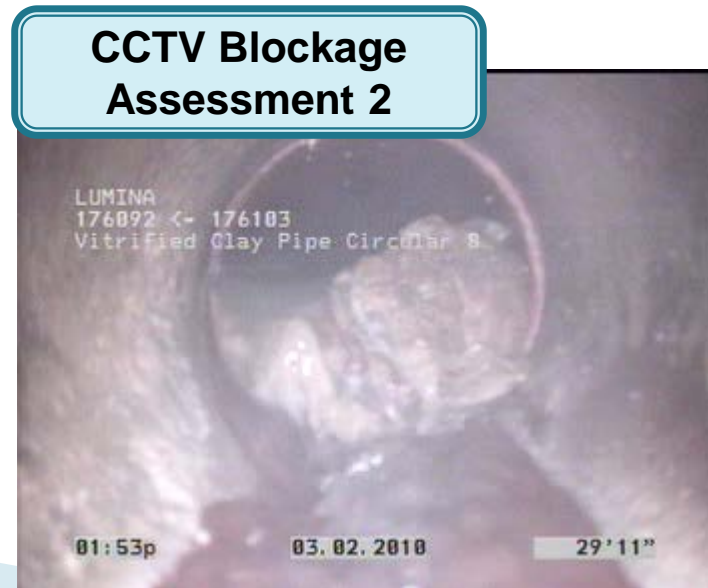
Acoustic Inspection Technology

▸ How Does it Work?

Transmitter "Yells"

SL-RAT
Sewer Line Rapid
Assessment Tool

Receiver "Listens"

Blockage

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

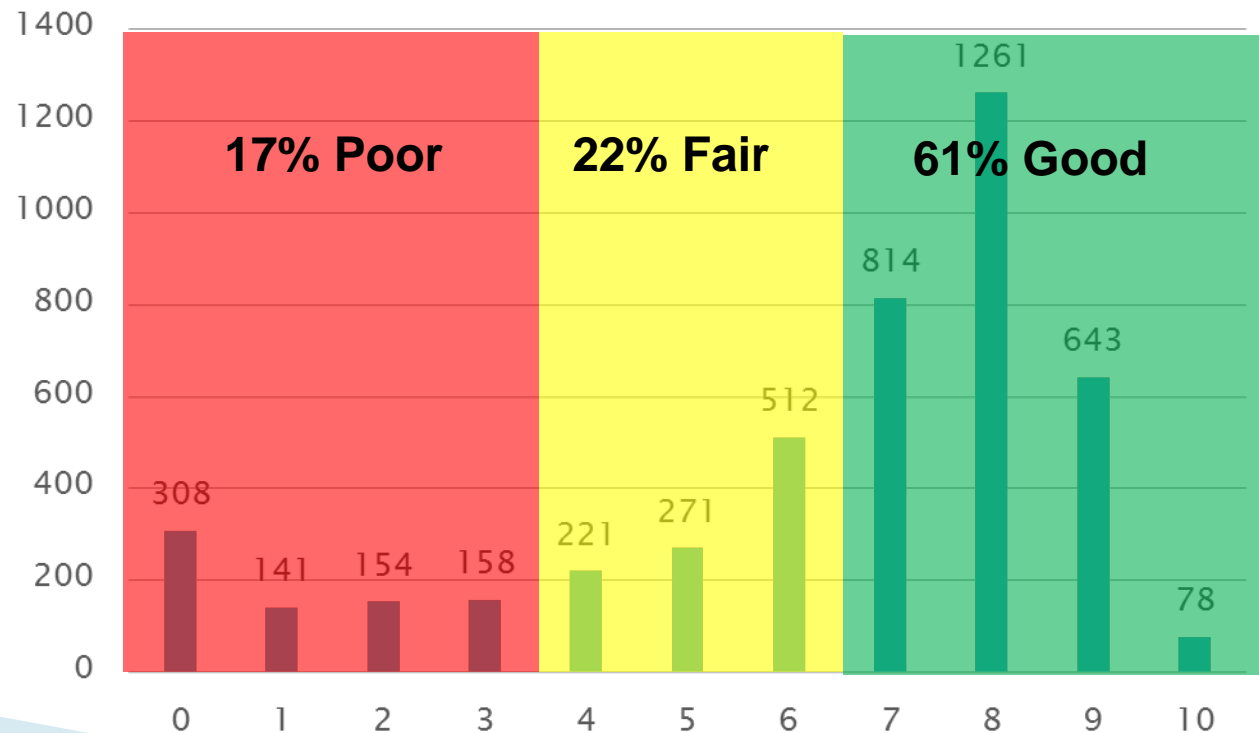- Acoustic Inspection Technology

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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

17% Poor	**22% Fair**	**61% Good**

Bar values by score:
- 0: 308
- 1: 141
- 2: 154
- 3: 158
- 4: 221
- 5: 271
- 6: 512
- 7: 814
- 8: 1261
- 9: 643
- 10: 78

Process flow

Print Maps & Give to Crew

Conduct Inspections

Download SL-RAT

Create Base Report

(1)

(2)

(3)

(4)

- Street Name
- Parcel Address
- Line Sizes

(7)

Close Out

- QA Cleaning
- Fix GIS Issues
- Update Records
- Schedule Next Inspection

Generate Cleaning Crew Work Orders

(6)

Map Out in GIS

(5)

13

- Situation Overview

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Key Learnings

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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Additional Information

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