



RATs In the House!

How Little Rock Water Reclamation Authority Moved from a Time-Based to Condition-Based Sewer Cleaning Strategy

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Presentation Outline

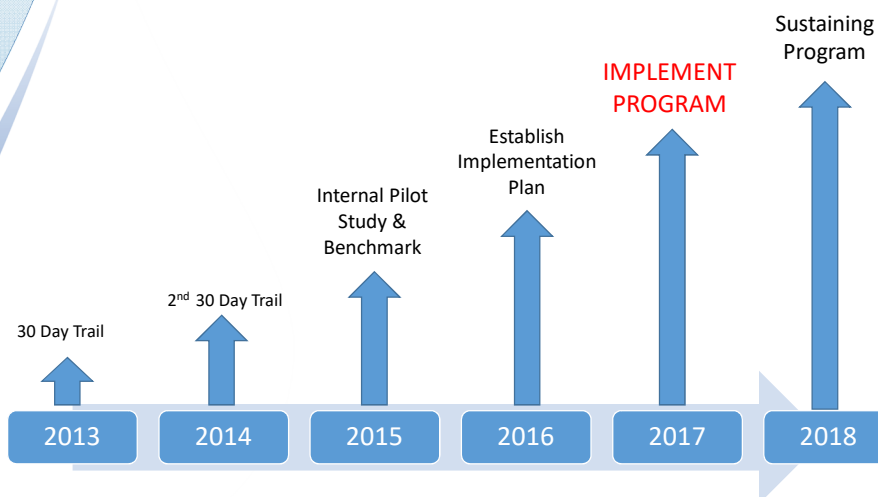
- Little Rock Water Reclamation Authority (LRWRA) Introduction
- Acoustic Inspection Overview
- LRWRA Implementation/Results
- Conclusion

Little Rock Water Reclamation Authority

- Population Served ~200,000
- 1,400 miles of Collection System
- 1,100 miles of gravity mains up to 12"
- Collection System Maintenance staff of 90 employees
- 5 Hydro Cleaning & 2 Hand Cleaning Crews
- 4 CCTV crews



Acoustic Inspection (AI) Timeline



How can the Technology Benefit Us?

- Improves Efforts to Reduce Non-Capacity Overflows
- Shifts from Time-Based to Condition-Based Cleaning Strategy
- Effectively Deploys Valuable Resources
- Increases annual maintenance on gravity system from 40% to 100% on mains up to 12"
- Adds Post-Cleaning Quality Assurance Capability

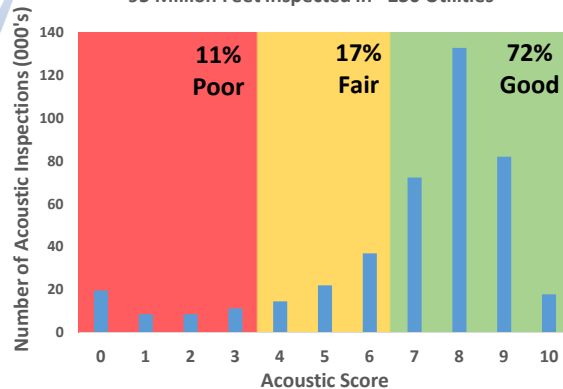
LRWRA Non-Capacity SSO's

2012	57
2013	50
2014	43
2015	49
2016	60

Why Make a Change Now?

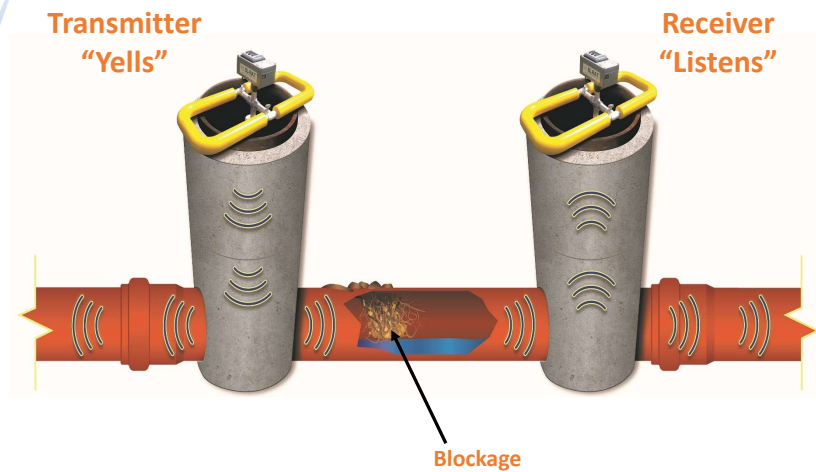
Acoustic Inspection Results

~95 Million Feet Inspected in ~230 Utilities



- Pilot Study and Benchmarking Results are Favorable
- No Additional Staff Needed to Implement
- Technology offers best option of reducing Non-Capacity Overflows
- Eliminate Cleaning Sewer Mains Unnecessarily

How Does Acoustic Inspection Work?



Active Acoustic Pipe Inspection Background

- Patented technology
- Gravity-fed sewer focus
- Developed in Charlotte with CMUD as key partner



- Over 100M feet inspected with over 250 municipalities
- Rapid assessment helps better focus cleaning and CCTV resources

Inspection Tool Portfolio



Manhole Inspection



ACOUSTIC



Zoom Camera



Push Camera



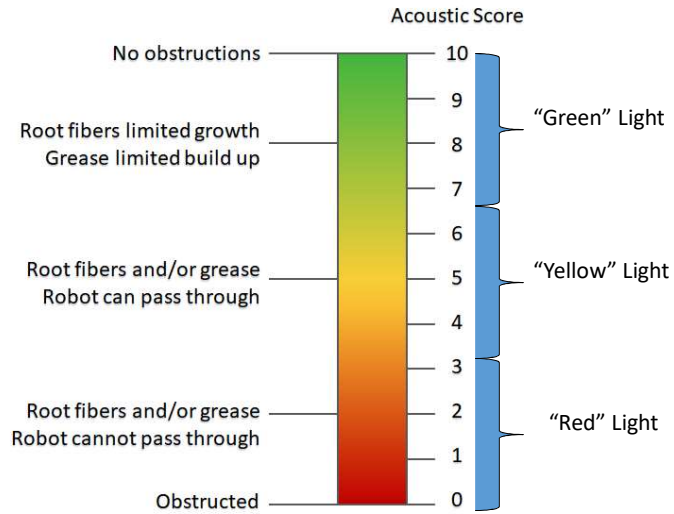
- CCTV/Robotic Camera
- Pipe Wall Defect Scanners
- Pipe Profiling / Robotic Multi-Sensor

Key Features Of Acoustic Inspection

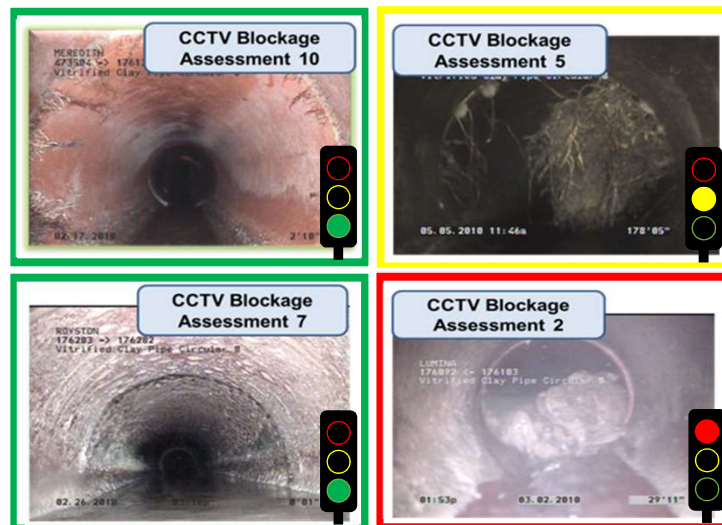


- No Flow Contact / No Confined Space Entry
- Simple to use – train operators in minutes
- Low Cost–Pennies/foot
- Rapid Onsite Results – Under 3 min./segment
- Portable < 30 lbs
- GIS Integration – GPS Enabled
- Archive Pipe Segment Blockage Assessments

Assessment Scale



Visual Comparison

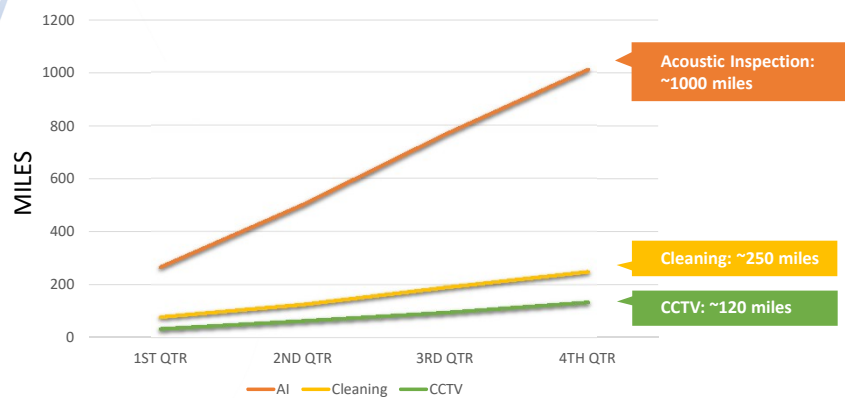


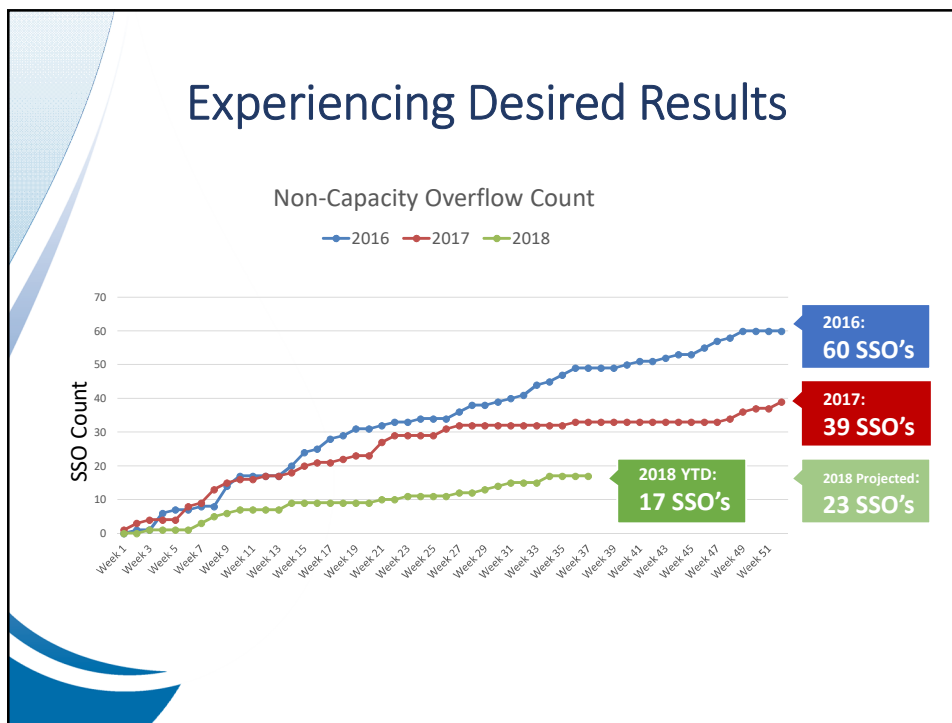
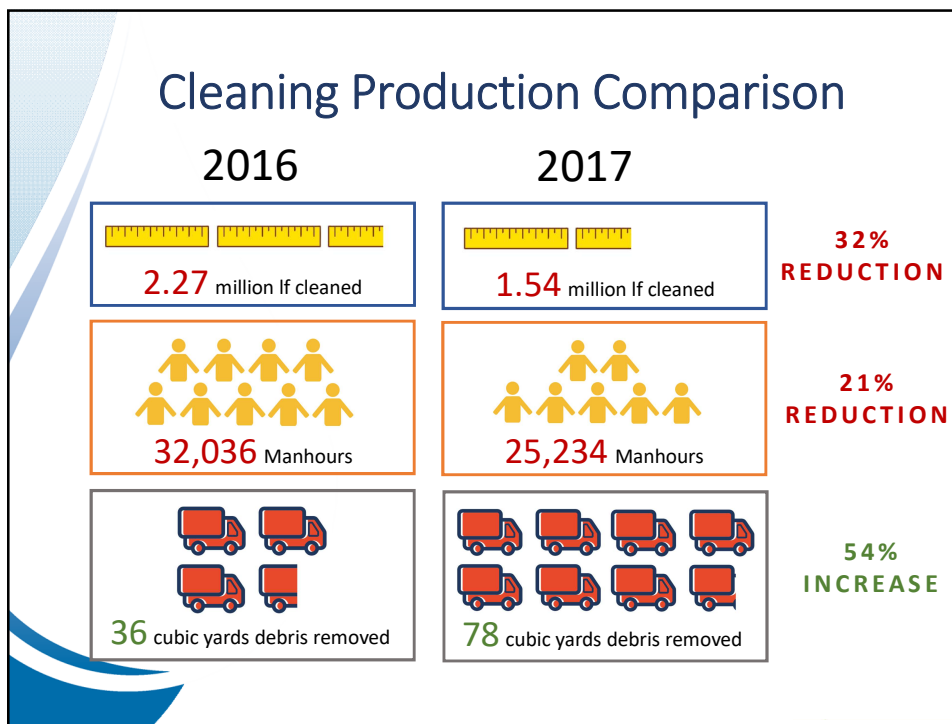
Keys To Successful Implementation

- Restructure staff to accommodate program
- Develop workflow procedures
- Identify starting point and plan
- Abort time-based PM's



1ST Year Production

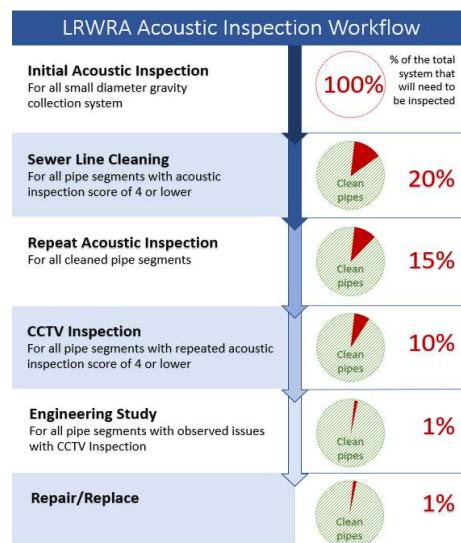




Technology Fits Under Two Conditions

- **Significant number of pipes do not require immediate attention**
- **Substantially cheaper than current inspection methods**

Acoustic Inspection Workflow



What Needs Immediate Cleaning?

20% of Sewer Mains
Tested with Acoustic
Inspection Require
Immediate Cleaning.

50% of Sewer Mains
Pass Repeat Acoustic
Inspection Post-
Cleaning.



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LRWRA Cost Evaluation

- **2017 AI = \$0.12/ft**
(Production = 5.3 million ft)
- **2017 CCTV = \$0.86/ft**
(Production = 712,000 ft)

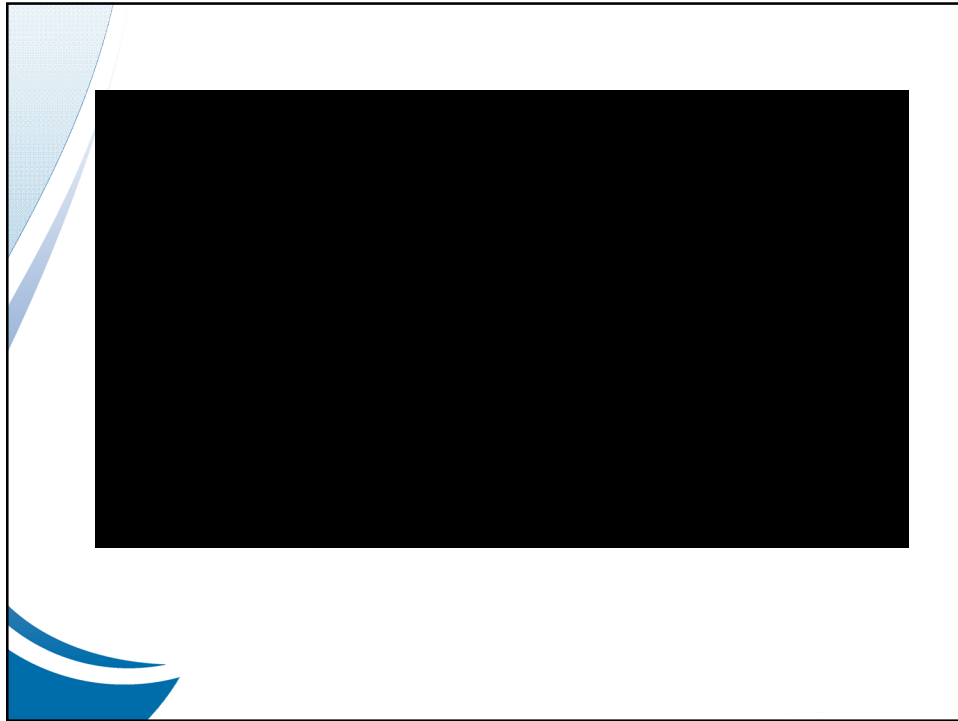


Utility of the Future TODAY

LRWRA is one of 25 utilities out of approximately 16,000 from around the nation receiving the ***Utility of the Future TODAY*** award.

The award is presented by the National Association of Clean Water Agencies, Water Environment Federation, Water Environment & Reuse Foundation, WaterReuse, and the U.S. Environmental Protection Agency.





Questions



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