

Solving the Challenges of Sewer Maintenance



Preventing Overflows

Condition - Based
Collection System Maintenance

Biggest Pains of Sewer Maintenance

1. Manpower & Hiring
2. Backups and Overflows
3. Asset Failure and H₂S
4. Inflow and Infiltration (I&I)

Manpower and Hiring

- Vacancy rates are as high as 30% in Public Works roles
- Existing teams are approaching retirement with the threat of losing tribal knowledge
- Collections teams are spread thin also managing Storm, Customer laterals, WWTP Projects, etc.
- Leaders must prioritize time-saving technologies

Sewer Backups and Overflows



Acoustic Assessment



RH BORDEN
DELIVERING DATA TO SMART CITIES

Maintenance Cleaning to Avoid Backups

Time-Based Cleaning Protocol

- Cleaning and Inspection Requirements 12 – 84 Months
- Select Neighborhood and Deploy Resources



Issues with Time Based Cleaning Protocol

- Clean every pipe segment regardless of condition
- Not viewing entire sewer system each year
- Requires a significant amount of time and water to clean lines
- Uses expensive equipment with high emissions

Transitioning to a New O&M Model

**Time-Based Cleaning
Maintenance Protocol**



**Condition-Based Cleaning
Maintenance Protocol**

New Technology - Acoustic Inspection

SL- Rapid Assessment Tool (RAT)



- Developed by InfoSense in 2008 (Ivan Howitt)
- WEF Technology Innovation Award Winner 2012
- Recommended by EPA
- Holds ASTM Standard for use
- Used by hundreds of utilities worldwide
- RH Borden Services 200+ US Municipalities

How it Works

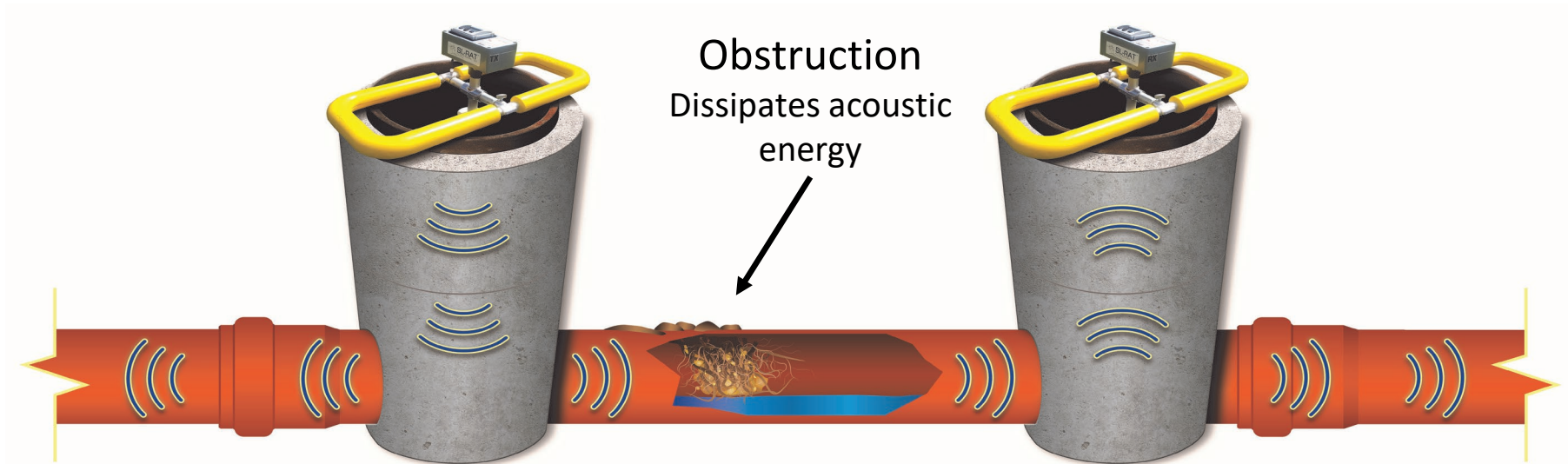


Transmitter

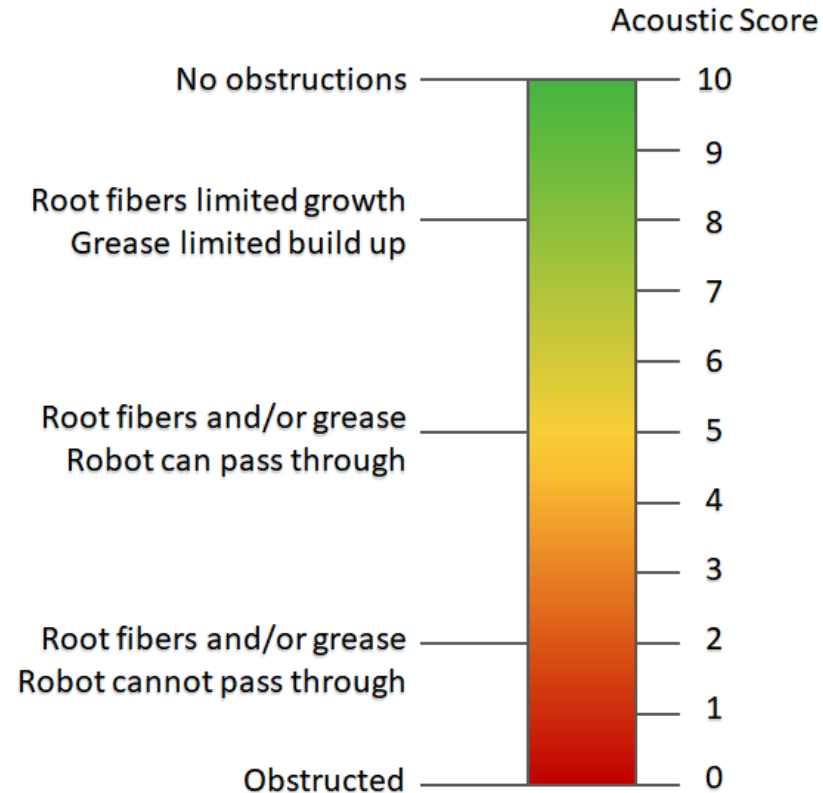


Receiver Analyzes

80 Seconds → 20,000 ft/day

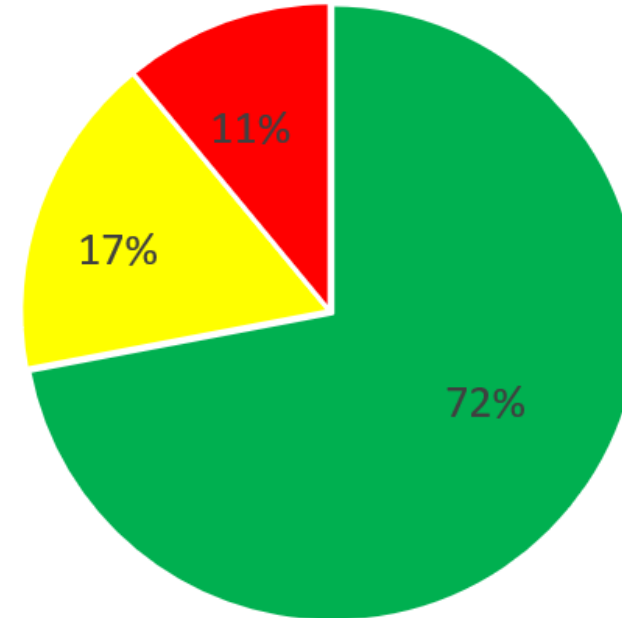


SL – RAT Assessment Scale – National Trends



Acoustic Inspection Results ~100 Million Feet of Pipe Inspected

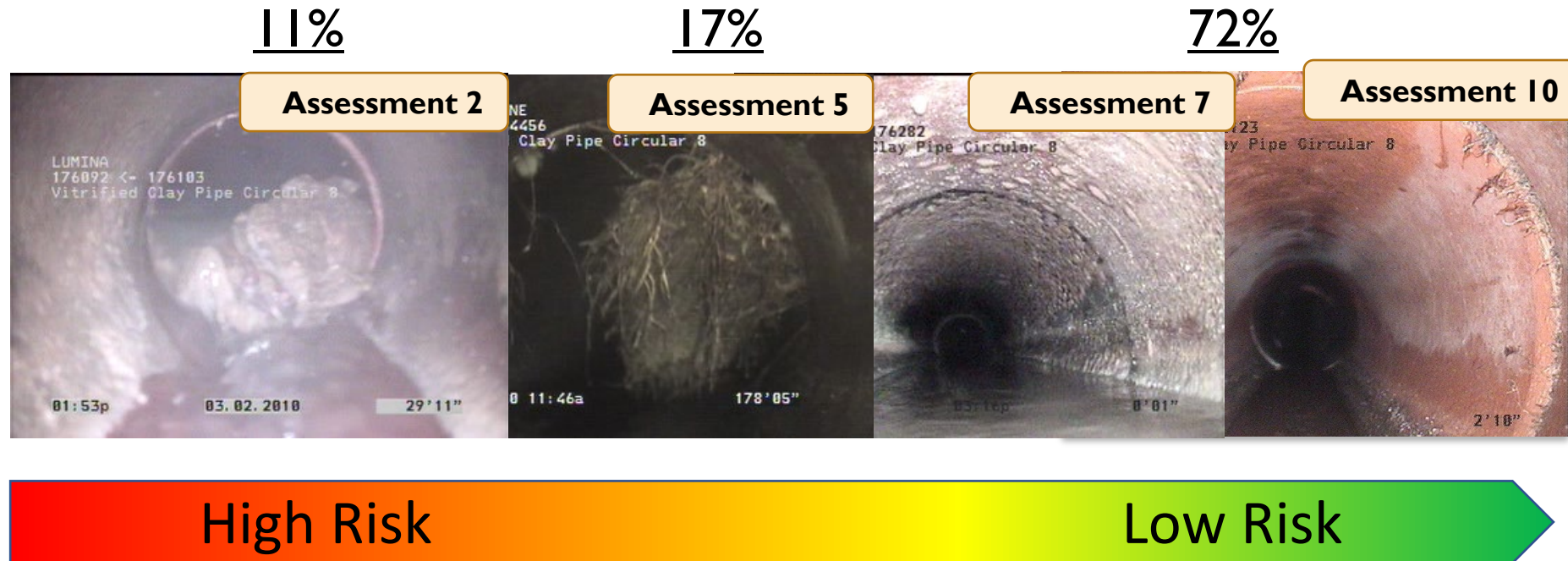
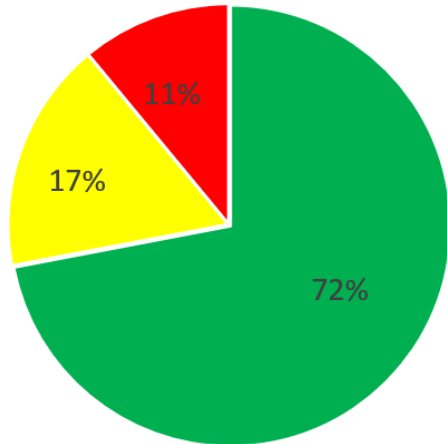
■ Acoustic Score ■ Good ■ Fair ■ Poor/Blocked



Risk Prioritization

Acoustic Inspection Results
~100 Million Feet of Pipe Inspected

■ Acoustic Score ■ Good ■ Fair ■ Poor/Blocked



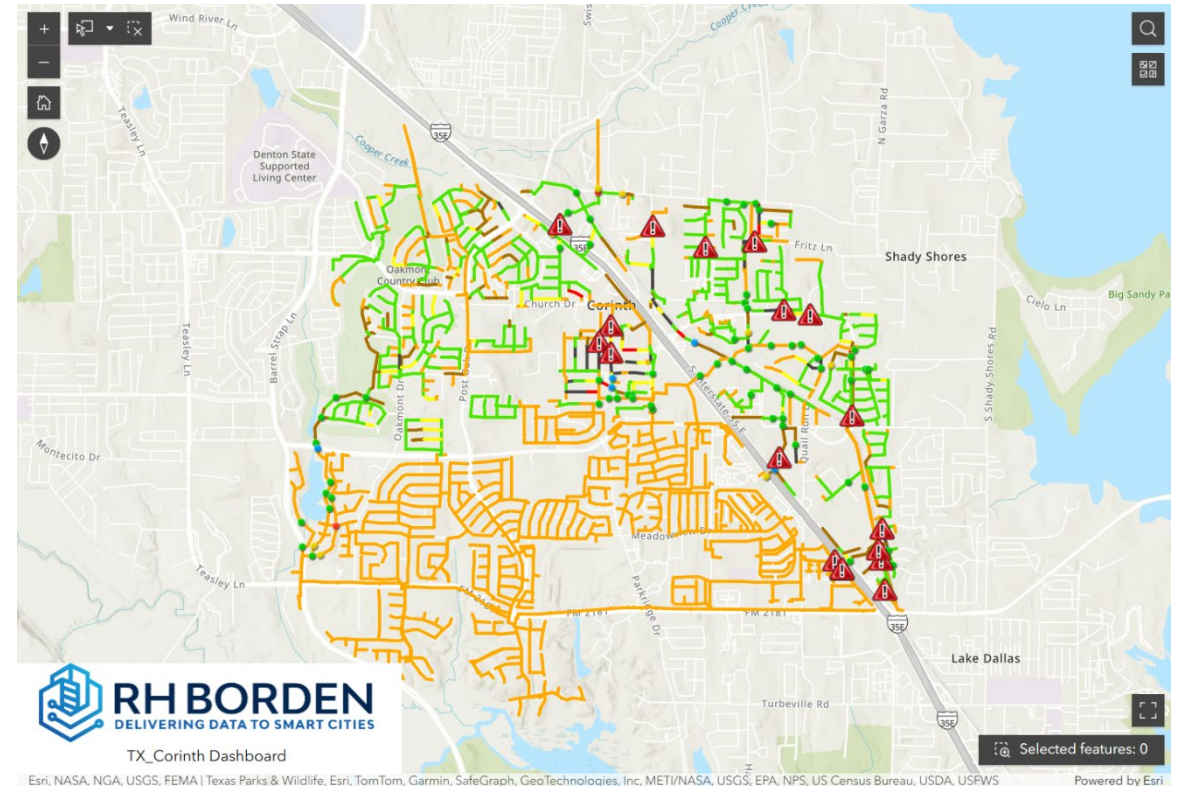
Goal: Lower Risk Across Full System



Acoustic Assessment for City of Corinth

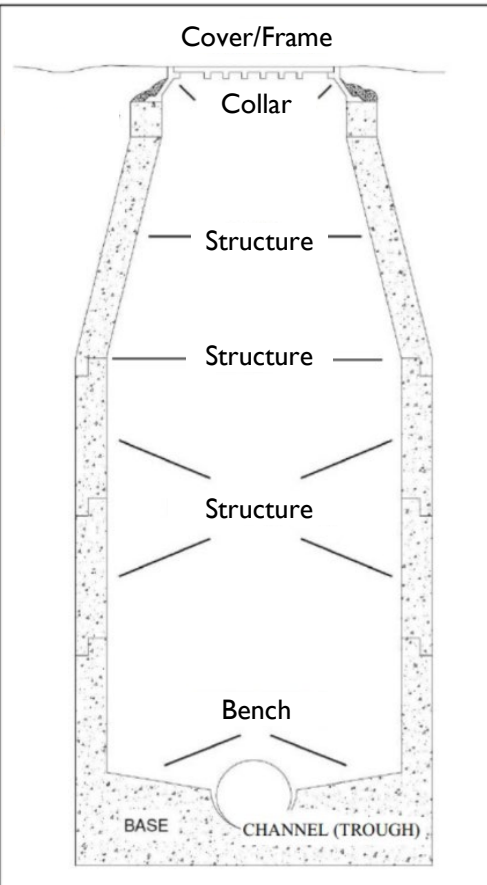
Corinth Collection System

- The City's annual goal is to clean and inspect one full quadrant per year
- 2024 Corinth transferred to Acoustic assessment for their quadrant plan
- 72% of lines assessed in 2024 and 2025 were rated in Good category and required no additional maintenance
- Benefits: Corinth has reduced their amount of cleaning yearly but has better outcomes due to speed of data





Level 1 Manhole Inspections



<u>Component</u>	<u>Attribute</u>	<u>Good</u>	<u>Fair</u>	<u>Poor</u>	<u>Urgent</u>
Collar Condition	Cracks, missing pieces, weathering, sunken, voids	No defects	Aggregate showing, and/or some cracks	Severe cracks, chunks missing, major aggregate	-
Cover/Frame Condition	Cracks, chips, cover seating	Flush cover, no defects	Slightly raised, chipped, or cracked	Significantly raised, chipped, or cracked	Missing cover
Structure Condition	Chimney, Barrel, and Cone Cracks and Degradation	No defects	Minor cracks and degradation	Major cracks and degradation	Collapsed manhole
Bench/Channel Condition	Cracks, debris, obstructing objects	<u>Good</u> Bench and channel clean and intact	<u>Dirty</u> Debris on bench or in channel	<u>Structural Defects</u> Cracks and other defects	Obstructing objects, surcharging
Infiltration	Infiltration	No signs of infiltration	Mild Infiltration	Significant Infiltration	Severe infiltration
Structure Material	Barrel and Cone material (Concrete / Brick / Lined)	-	-	-	-



THANK YOU

