

Sewer Line Rapid Assessment Tool



Acoustic Assessment

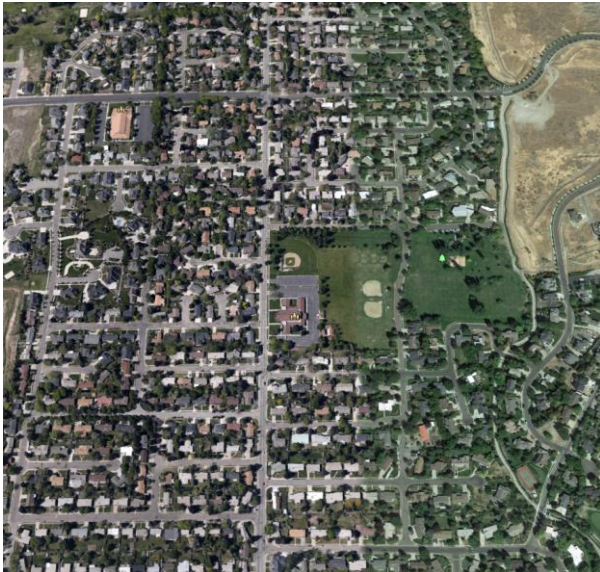


RH BORDEN
DELIVERING DATA TO SMART CITIES

Time-Based Protocol For Maintaining Sewer Lines

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 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**

How it Works

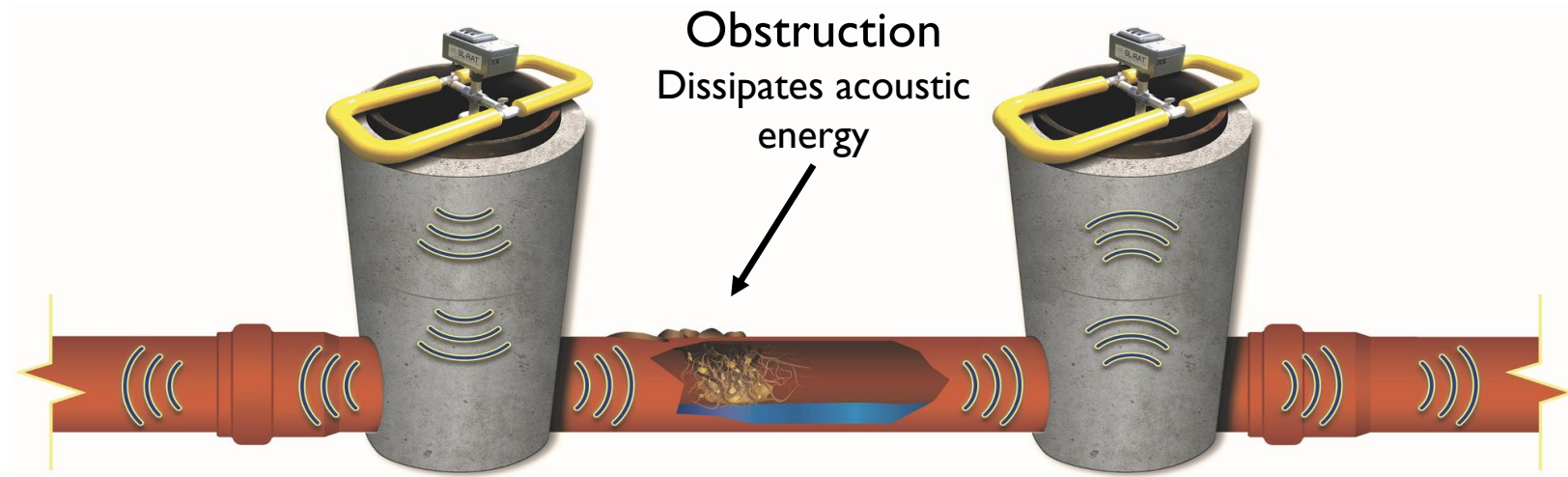


Transmitter



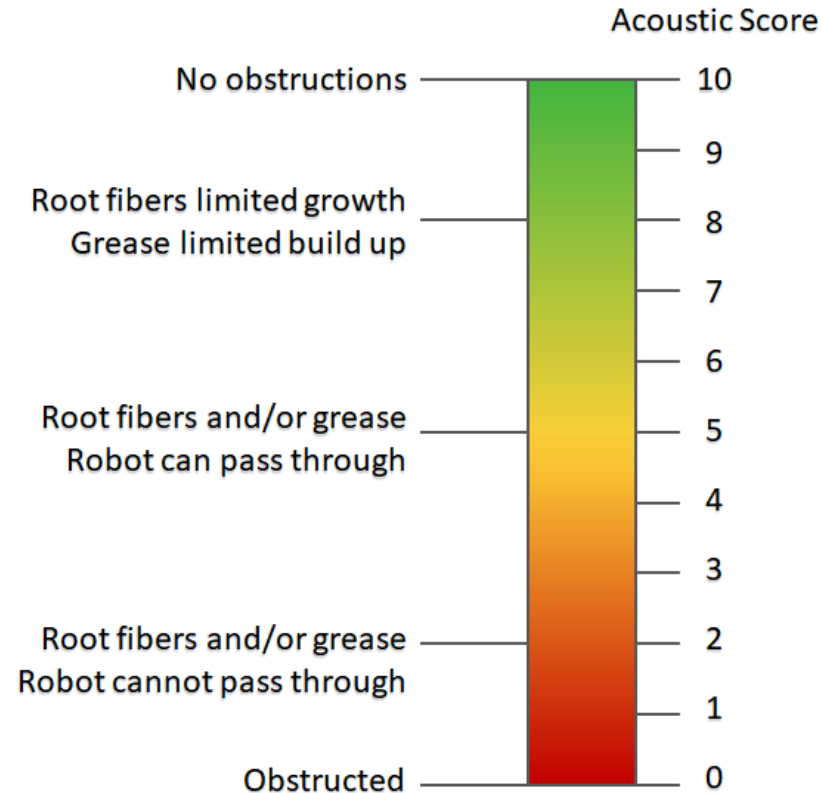
Receiver Analyzes

80 Seconds



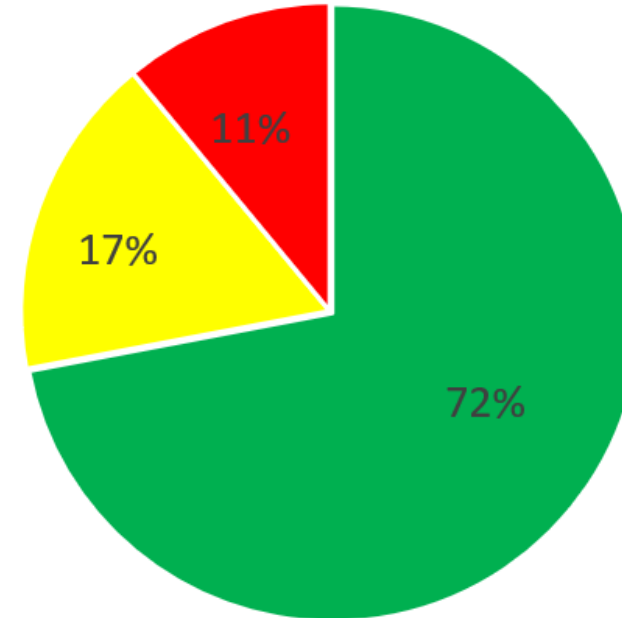
Obstruction
Dissipates acoustic
energy

SL – RAT Assessment Scale – National Trends



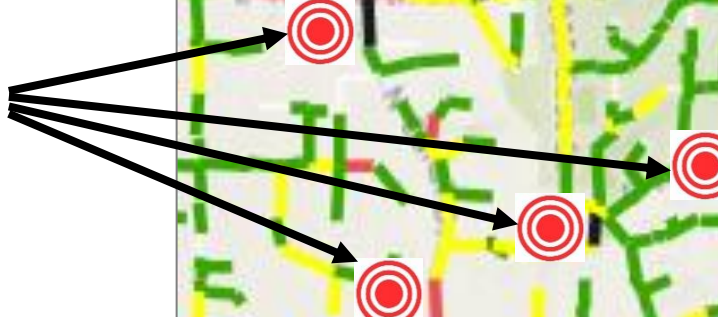
Acoustic Inspection Results ~100 Million Feet of Pipe Inspected

■ Acoustic Score ■ Good ■ Fair ■ Poor/Blocked



Condition-Based Approach with SL-RAT

Send Trucks
On Demand

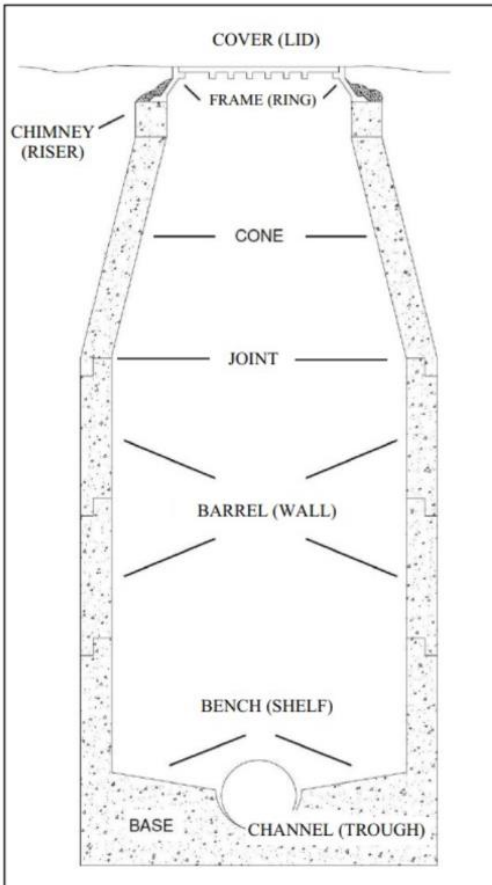


SL-RAT Standard Pace:
20,000 ft/day per crew

Good	
Fair	
Poor	
Blocked	



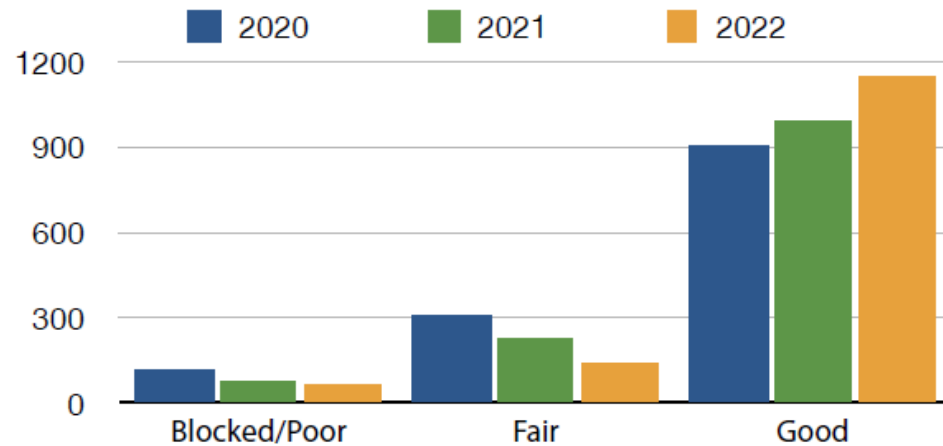
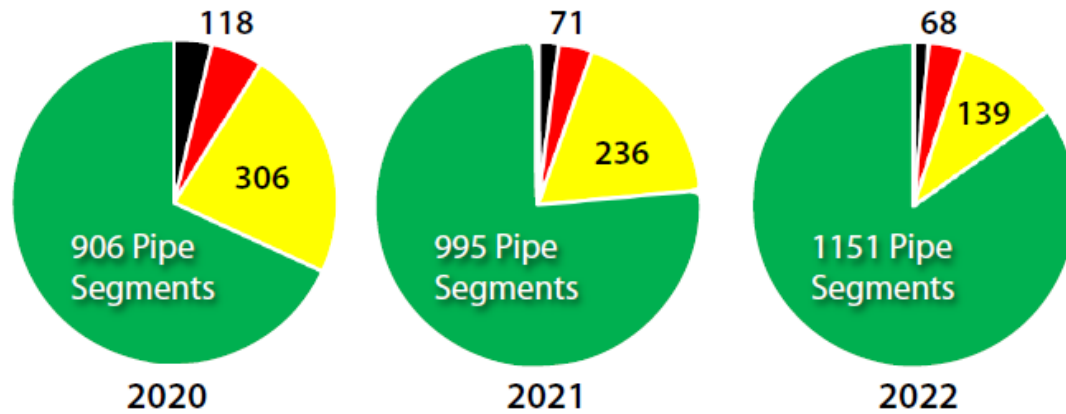
Level 1 Manhole Inspections



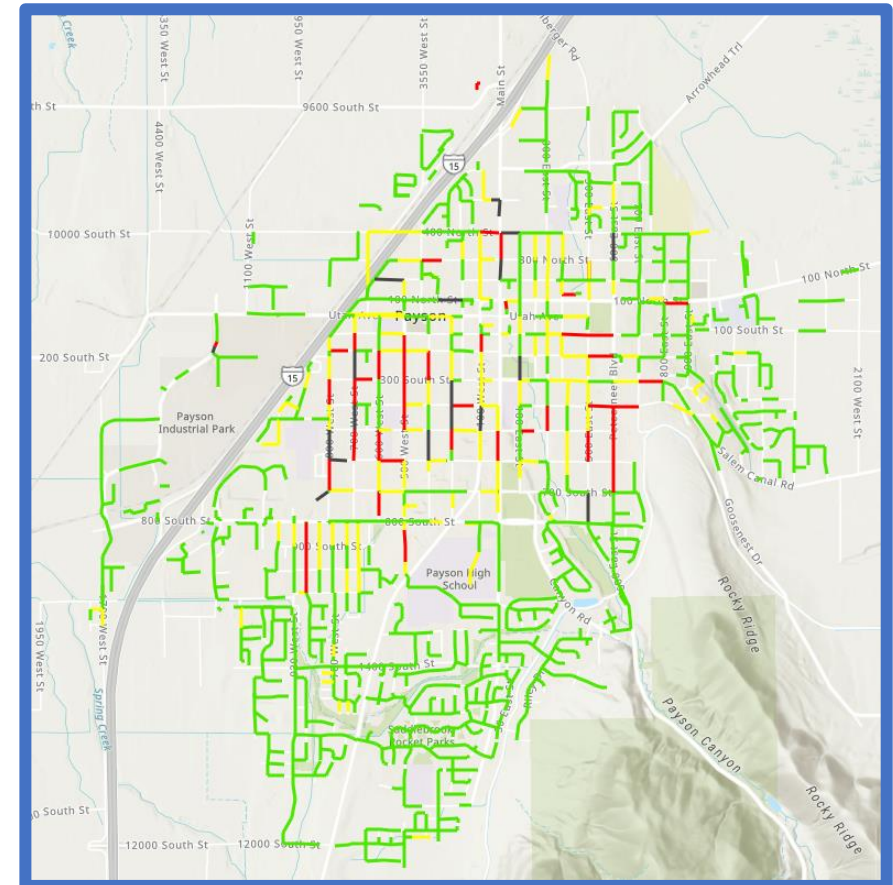
<u>Component</u>	<u>Attribute</u>	<u>Good</u>	<u>Fair</u>	<u>Poor</u>	<u>Urgent</u>
Collar Condition	Cracks, missing pieces, weathering, sunken, voids	No defects	Aggregate showing, and/or some cracks	Severe cracks, chunks missing, major aggregate	-
Cover/Frame Condition	Cracks, chips, cover seating	Flush 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)	-	-	-	-

Acoustic Assessment Effectiveness

Payson Utah Case Study



Payson 2022 System Condition



Insurance Approval

CIRSA “considers the RH Borden condition-based maintenance program an acceptable alternative method for annual maintenance and supports its member's use of these RH Borden services and products.”

Acoustic Assessments Benefits

Outcomes

Remove more debris from system



Clean 50-80% less Pipe

High Emissions



Low Emissions



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Resources

Free up Resources



Use 80% - 90% Less Water

