

New Standard for Sewer Lateral Condition Assessment

Find Infiltration & Certify Cured-In-Place Pipe

EPA-Referenced 7th EDITION, VOLUME 1, OPERATION AND MAINTENANCE OF WASTEWATER COLLECTION SYSTEMS manual.



New Lesson 4.4 - ELECTRO SCANNING INSPECTION by Ken Kerri, Ph.D., P.E.
Chapter 4 - Inspecting and Testing Collection Systems

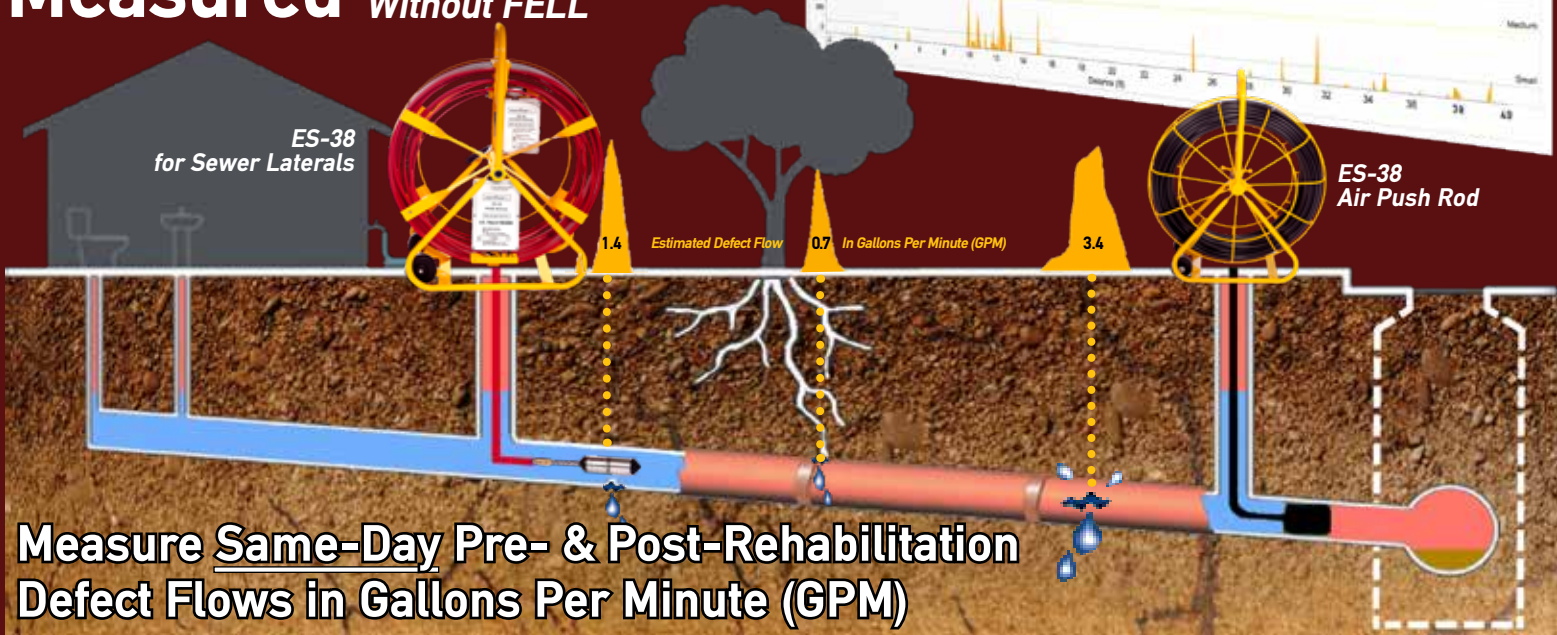
- Find 90-100% of Infiltration Missed by CCTV Inspection.
- Determine Flow Reductions from Rehabilitation.
- Certify CIPP Lining, Repairs, & Rehabilitation.
- Identify Sources of Infiltration to Prevent SSOs.
- More Accurate Than Smoke or Dye Flood Testing.



Focused Electrode Leak Location (FELL)

Represents the industry's first reliable, proven, and measurable way to provide unbiased pipe condition assessment without third party data interpretation or operator coding.

Most Sewer Leaks Can't Be Seen or Measured Without FELL



Measure Same-Day Pre- & Post-Rehabilitation Defect Flows in Gallons Per Minute (GPM)

U.S. Patent 9143740 and 9304055. Multiple International Patents Pending.

Services Available From Electro Scan Inc.





critical sewers®



Machine Intelligent

Pre & Post CIPP Assessments

Quantify Reduction In Suspected Flows



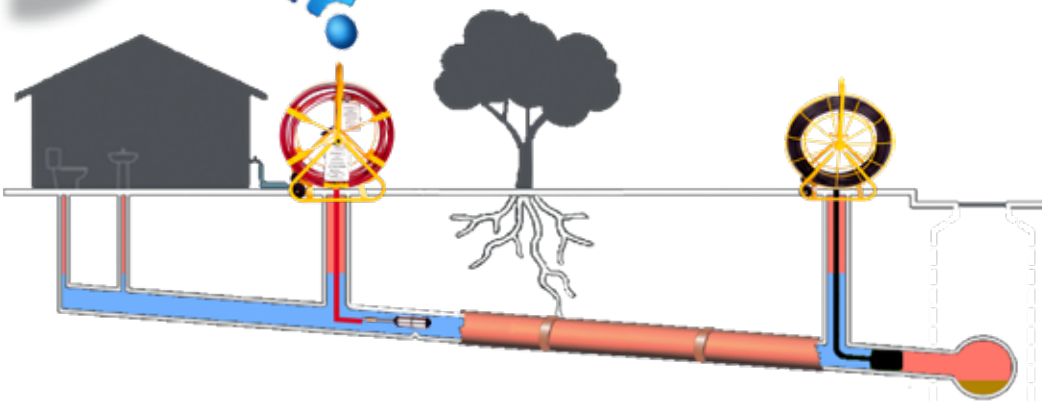
No Arguing Over CCTV Videos

Watertight Certification of Contractor's Work

Defect Flows by Location and GPM

Integrate with InnoVize InfoMaster®

Field-to-Office Reporting, Available in Minutes!



	Number of Scans	Length of Pipe	Total Defects	Gallons Per Minute	Gallons Per Day
TOTAL	40	1,056	33	13.03	18,763

In this project, 40 service laterals were inspected finding that only eight (8) laterals showed any leaks, with one (1) lateral representing seventy-one percent (71%) of the total infiltration and only two (2) laterals requiring lining. Despite the popular belief 'that laterals contribute the majority of infiltration in this area' it was found that sewer mains were not properly evaluated since previous assessments had been based on visual inspection.

Date	Address	Material	Diameter	Distance	Small Defects	Med. Defects	Large Defects	GPM
10/12/2016	741 - Bayshore	PVC	6	43.80	11	0	1	9.24
10/13/2016	720 - Orton	PVC	6	36.92	6	0	0	1.41
10/13/2016	2901 - Terramar	PVC	6	35.35	4	0	0	0.56
10/12/2016	615B - Bayshore	PVC	6	28.31	5	0	0	0.53
10/12/2016	711 - Bayshore	PVC	6	34.73	1	0	0	0.40
10/13/2016	2835 - Terramar	PVC	6	20.44	2	0	0	0.39
10/13/2016	2831 - Vistamar	PVC	6	16.46	2	0	0	0.33
10/13/2016	2801 - Terramar	PVC	6	27.41	1	0	0	0.17
10/13/2016	606 - Orton	PVC	6	35.70	0	0	0	0.00
	700 - Orton	PVC	6	34.67	0	0	0	0.00
	708 - Orton	PVC	6	36.19	0	0	0	0.00
	720 - Orton	PVC	6	34.70	0	0	0	0.00

Measuring Pre- and Post-Rehabilitation Defect Flows Using Electro Scan's FELL

PROBLEM

Traditionally, cities and consulting engineers collected flow data from strategically positioned flow meters, lift stations, and treatment plants, to determine general areas where the greatest amount of Rain-Dependent Infiltration (RDI) entered the sewer network during wet weather events.

Often using multi-year readings to calibrate flow data, even longer periods may be needed to quantify reductions from rehabilitation. Requiring similar-sized wet weather events to occur, after completing repairs, rehabilitation, and replacement programs, engineers have routinely waited 3-5 years to report on rehabilitation effectiveness.

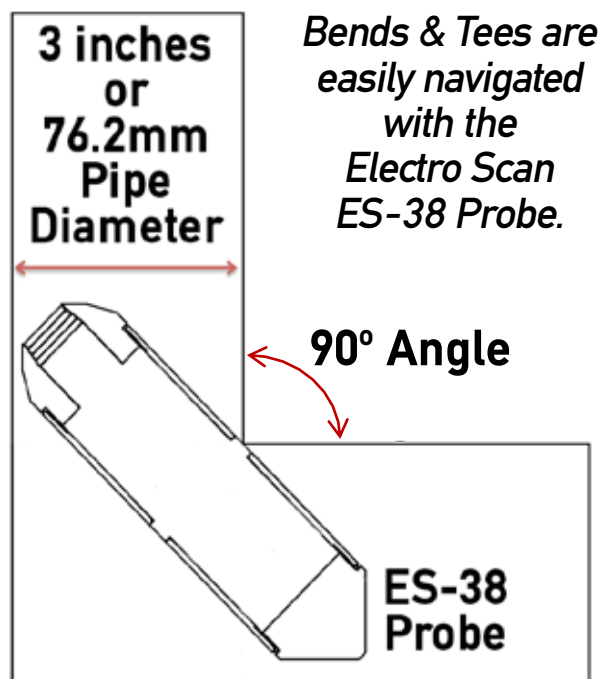
Not to mention flow data being thrown off by flow meters that go offline due to poor maintenance or battery issues, residential households using sump pumps, and other anomalies.

SOLUTION

Calibrated by consulting engineering firms, Electro Scan can now be used to provide a Baseline Gallon Per Minute (GPM) Defect Flow Analysis, *before* and *after* rehabilitation.

Agencies may now use Focused Electrode Leak Location (FELL) to provide *same-day post-rehabilitation* flow analysis that can be immediately compared to baseline readings in order to estimate reductions achieved from rehabilitation.

Cities can now identify and quantify sources of infiltration using machine-intelligent precision, helping decide whether laterals or sewer mains are contributing more infiltration, and allowing engineers to plan & execute targeted repair and rehabilitation programs on their most Critical Sewers®.



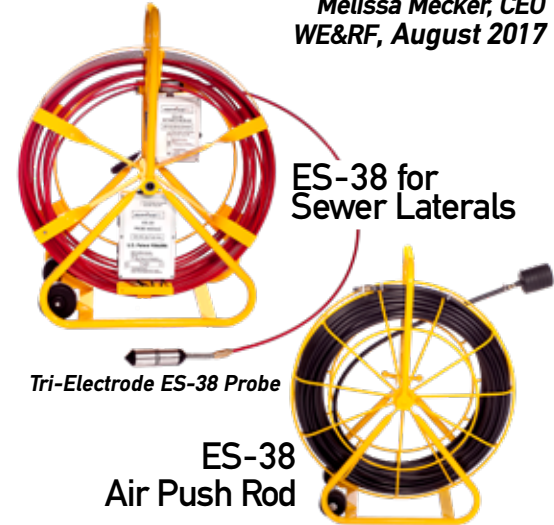
Automatic, Measurable, & Unbiased Reporting

Conveyance	Service Laterals Connecting Residential, Commercial, and Industrial Customers to Municipal Sewer Mains.	
Required Flow	None. Dry Pipe or Fully Surcharged Flow.	
Pipes	Pipe Diameters	3 to 8 inch (76 to 200mm)
	Pipe Shape	Any, including Circular, Box, Oval, and Trapezoidal. Able to navigate 90° bends or elbows.
	Pipe Materials	Electrically Non-Conductive Pipe Walls, including, Asbestos Cement, Brick, Cement Mortar Lined and Coated Steel, Cured-In-Place Pipe, Ductile Iron with Epoxy Coatings, Fiberglass Reinforced Pipe, High-Density Polyethylene Pipe, Prestressed Concrete Cylinder Pipe, Polyethylene, Polyvinyl Chloride, Reinforced Concrete, Vitrified Clay, etc.
ES-38	Dimensions	Length: 6.5 inches (165mm); Diameter: 0.57 inches (15mm)
	Scan Recorder	Critical Sewers® Field Laptop PC, Wifi Connection to Critical Sewers® Cloud Application.
	Scan Speed	30 ft/minute (10m/minute)
	Environmental	IP 67. Able to withstand rain and low pressure wash down. 20°F to 120°F (-7°C to 50°C)
	Power Supply	14ea 3.7V Rechargeable Lithium-Ion Batteries -or- 12V DC External Power Supply.
	Cable	1/4 inches (6.5mm) fiberglass push rod. 200 ft (60m) range from single point of access.
	Reel	Diameter 26 inches, L26 inches, W12 inches, H32 inches (L66cm, W30cm, H81cm)
	Weight	39 lb (17.7kg)
	Current (max)	40 mA
	Electrical Array	Focused tri-electrode array.
Defect Flow Calculation	± 30% Accuracy measured in Gallons Per Minute (GPM) or Liters Per Second (LPS).	
Defect Location	± 0.4 inches (1 cm)	
Air Push Rod	Manual pump air source, 25 psi. Tire valve compatible with standard test balls.	
Advantages	1. No manual coding required.	8. Differentiates superficial cracks from cracks through pipe.
	2. Finds 90-100% of leaks missed by CCTV.	9. Find & measure defects hidden by grease, silt, & encrustation.
	3. Locates and measures leaks in GPM or LPS.	10. Automatically evaluates 360° of pipe wall.
	4. Tracks pre- and post-rehabilitation I/I reduction.	11. Determines water tightness of service laterals.
	5. Use in field either rain or shine.	12. Fewer breakdowns. No moving parts.
	6. Replaces Smoke Testing, Soaker and Dye Testing.	13. Recommended by WRC, developers of NASSCO CCTV Codes.
	7. Finds defects inside joints not seen by CCTV.	14. Reports available in minutes, not hours, days, or weeks.
	1. Does not provide a clock position of defect location inside the pipe, but location is accurate to within 0.4 inches (1cm).	
	2. Does not scan metallic pipes or fittings, unless there is a coating or liner (minimum of 1-2mm).	

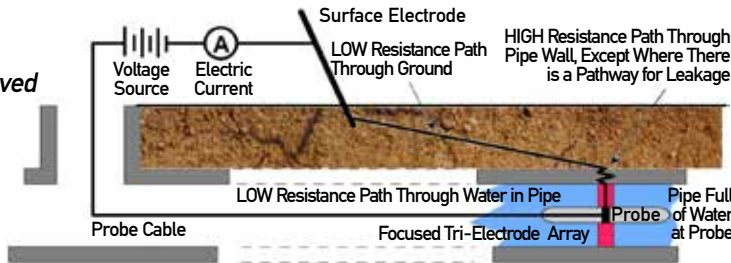


"Electro Scan provides an unambiguous evaluation of lateral conditions and the location of potential defects."

*Melissa Mecker, CEO
WE&RF, August 2017*



ASTM F2550 Committee F36 Approved



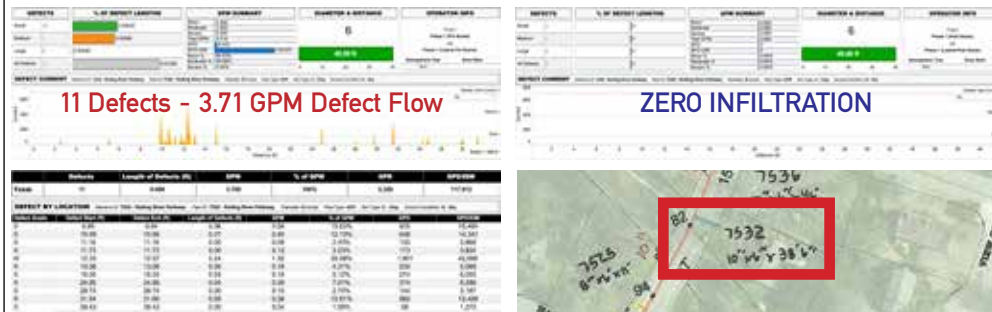
ASTM F2550-13 standard covers the location & measurement of all cracks, fissures, broken joints, and leaking service connections, by measuring the change in electrical current able to pass through defects in a pipe wall.

7532 Rolling River Drive - FELL Sewer Lateral Assessment

ASSESSMENT	ADDRESS	PIPE	DIAMETER	LENGTH	SMALL DEFECTS	MED. DEFECTS	LARGE DEFECTS	GPM
Pre-CIPP	7532 - Rolling River	VCP	6	39,763	10	1	0	3.71
Post-CIPP	7532 - Rolling River	CIPP	6	39,622	0	0	0	0.00

PRE-CIPP ASSESSMENT

POST-CIPP ASSESSMENT



"You don't have to argue anymore with homeowners, contractors, or council members, about what they see or don't see using Closed-Circuit Television (CCTV). Now you can use next generation, machine-intelligent technology, to show where laterals are leaking."

*Chuck Hansen, Founder
Electro Scan Inc.*



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