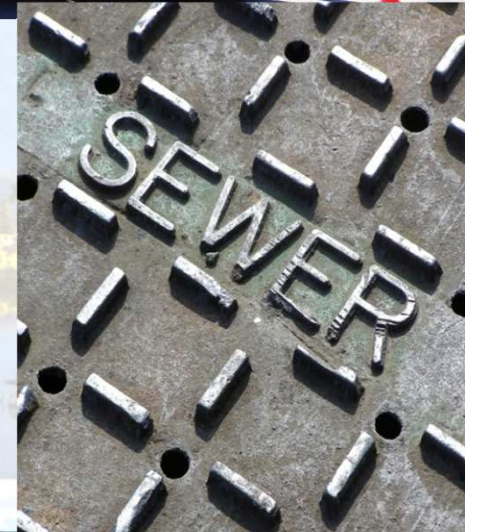


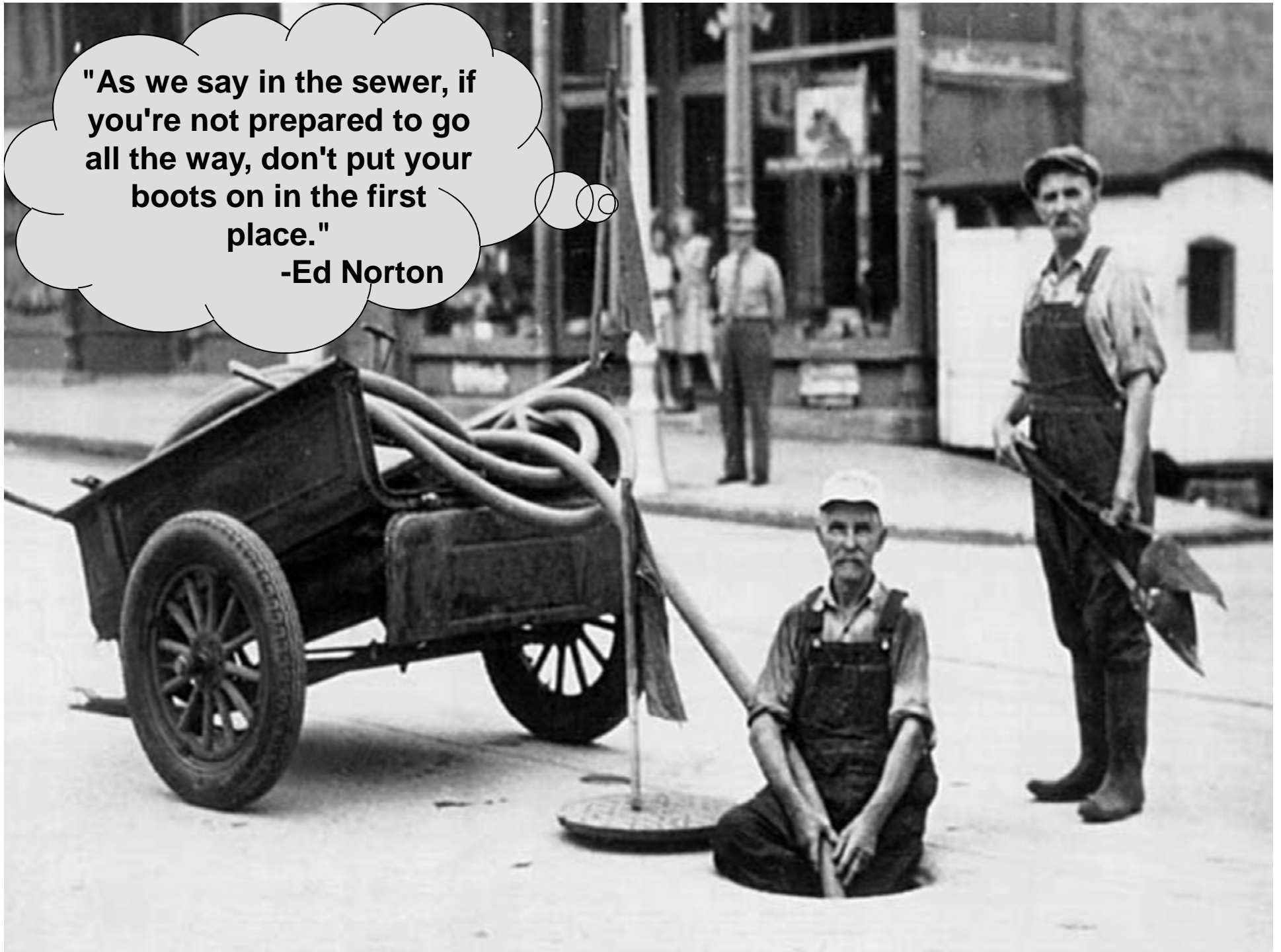
*The **12 Step** Program for your Sewer System*

**Core Attributes of Effectively Managed
Wastewater Collection Systems**

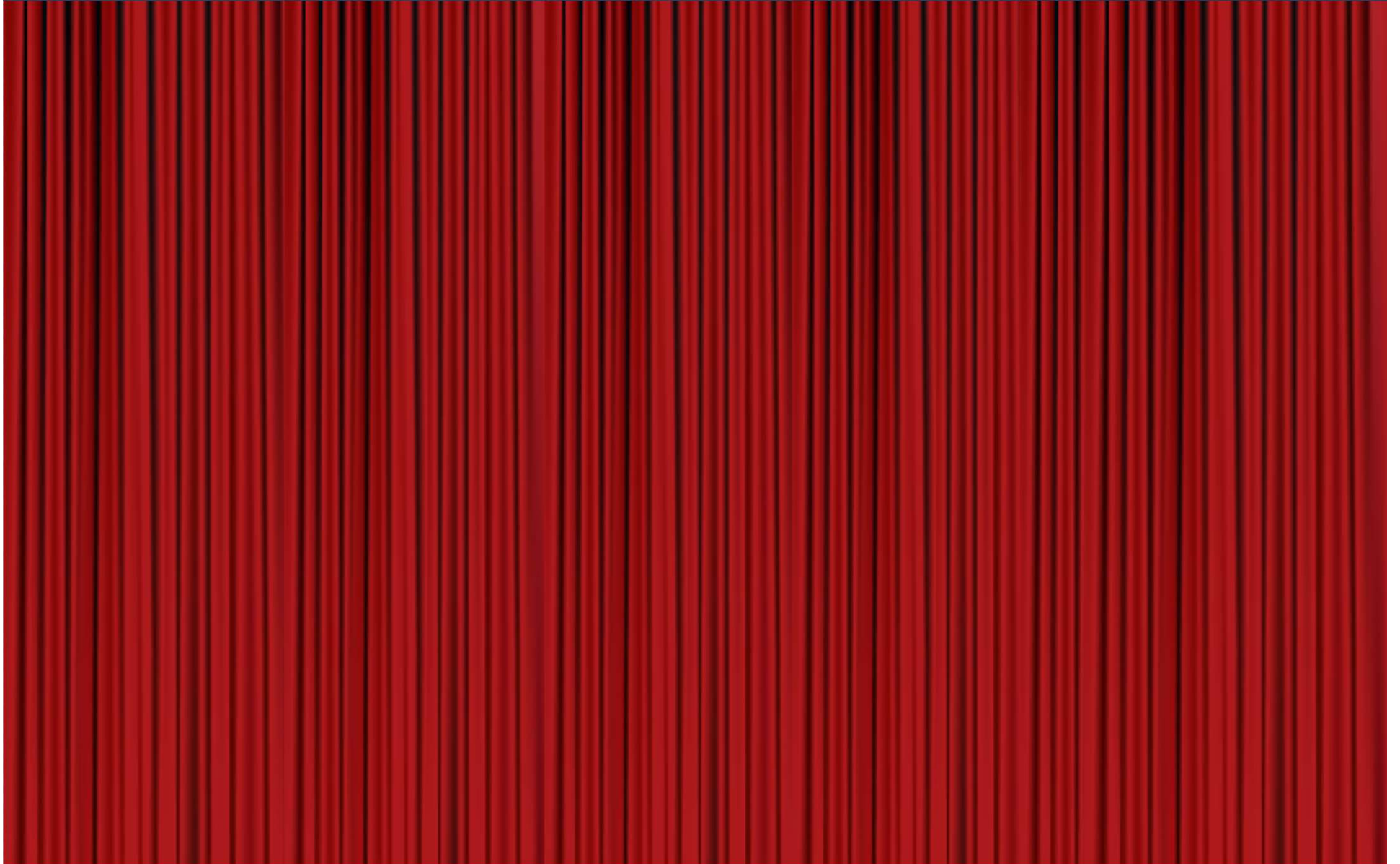


**"As we say in the sewer, if
you're not prepared to go
all the way, don't put your
boots on in the first
place."**

-Ed Norton



Out of Sight ... Out of Mind
The “Old Normal”



In Sight ... In Mind The “New Normal”



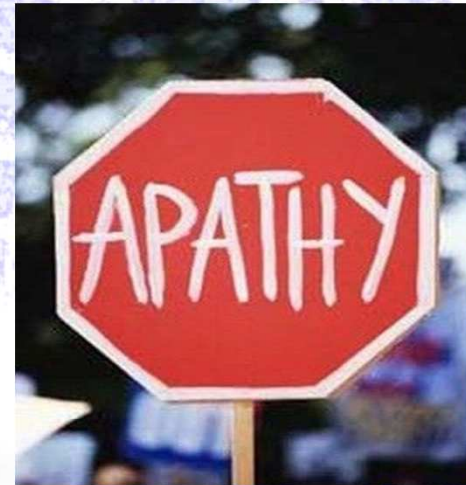


Challenges

- Public Expectations
- Compliance
- Growth
- Aging Infrastructure
- Limited Funds & Resources
- Economic Recession
- NIMBY, NIMTOO, ...



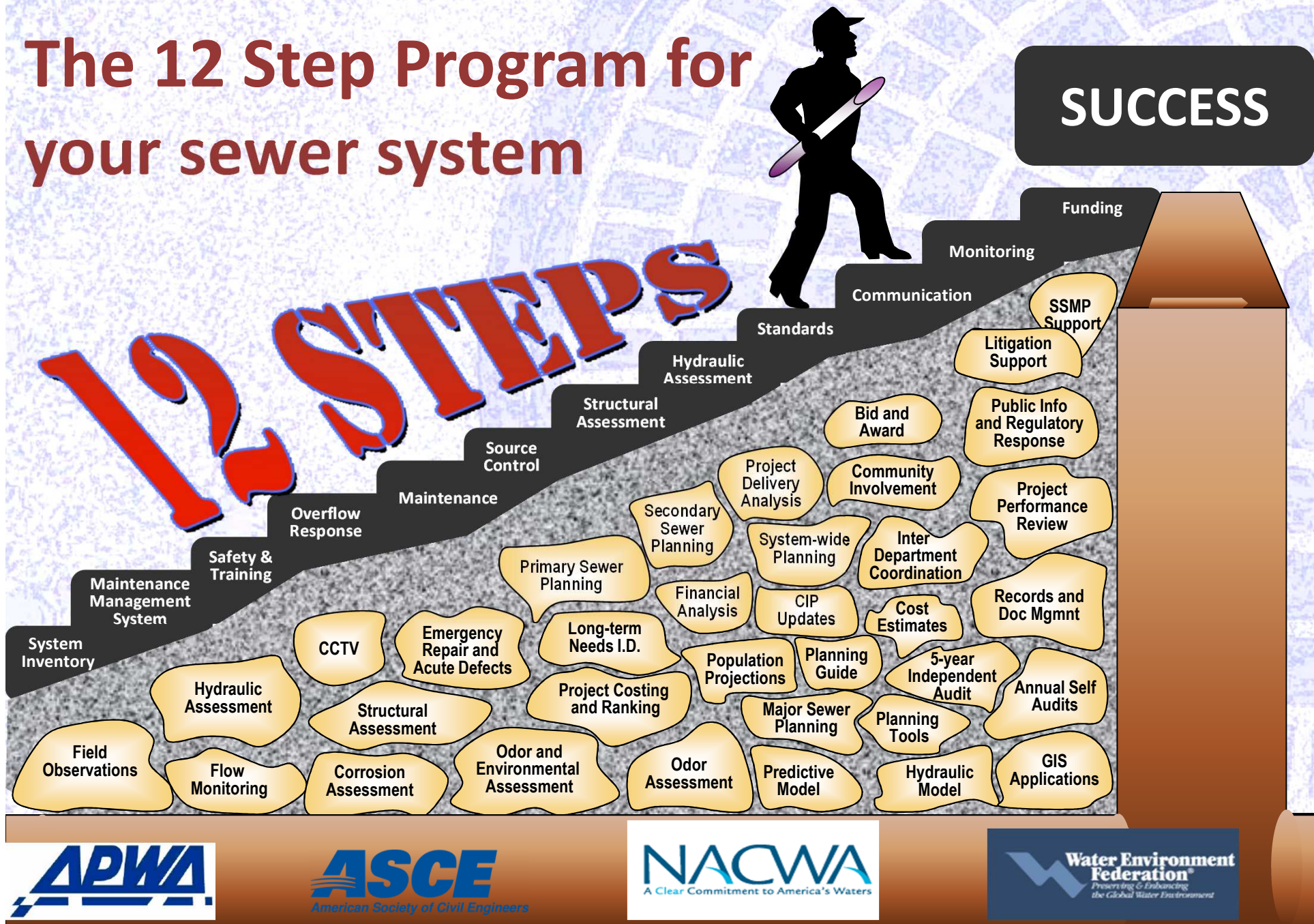
Where are you now?



Call-to-Action

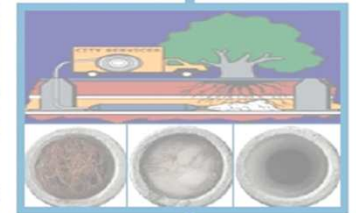


The 12 Step Program for your sewer system



Core Attributes of Effectively Managed Wastewater Collection Systems
July 2010

APWA
ASCE
NACWA





Purpose

- Focus resources on complying with a holistic SSO protocol rather than defending enforcement actions.
- Thousands of satellite collection systems can be brought under these requirements.
- Increased and enhanced spill reporting and notification.





Purpose

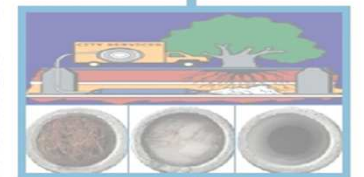
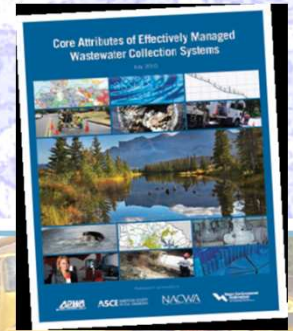
- Serve as a model for a future federal program.
- Show the public that we are an active participant in protecting the environment.
- Achieve infrastructure sustainability.
- Minimize lawsuits and enforcement actions.
- Identify gaps and research needs.
- Protect public health and the environment.





Core Attributes (12 Attributes)

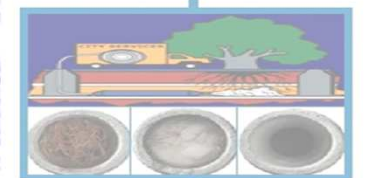
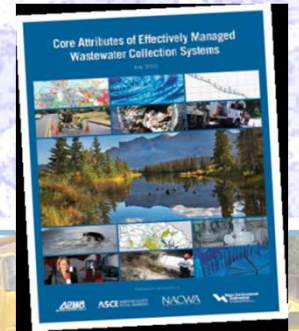
1. System Inventory & Information Management
2. Maintenance Management System
3. Safety & Training
4. Overflow Emergency Response Plan
5. Collection System Maintenance
6. Source Control

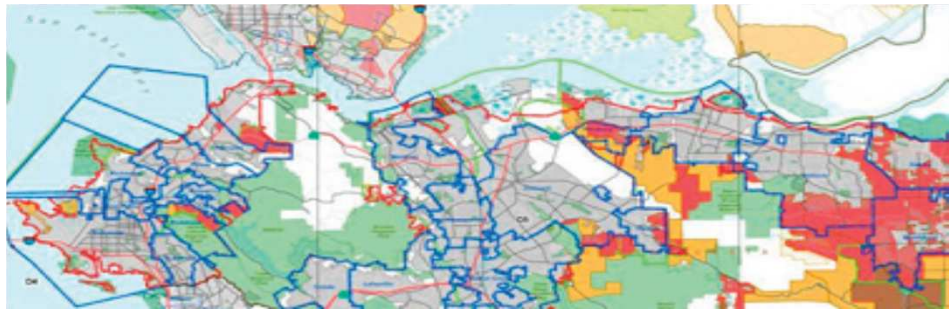




Core Attributes (12 Attributes)

7. Structural Condition Assessment
8. Hydraulic Capacity Assessment, Evaluation and Assurance
9. Standard Design, Construction & Inspection
10. Communication & Outreach
11. Monitoring, Measurement & Modification
12. Adequate Funding





System Inventory & Information Management

NAVIGATELA HOME PAGE - Microsoft Internet Explorer provided by Bureau of Sanitation Media Ctr

File Edit View Favorites Tools Help

Address http://boemaps.eng.ci.la.ca.us/index01.cfm

NavigateLA
City of Los Angeles
Bureau of Engineering

Special Update about help support contact

Show me: Default Layers GO

DEPARTMENT OF PUBLIC WORKS

Search MyNavigateLA Links

Sewer Pipes Report Back

Pipe ID	5150911451509152A
Basin	
Upstream Invert	240.24
Downstream Invert	239
Length	281.8
Slope	0.0041
Size	33
Width	0
Material	BRK
Shape	SE
Street	MISSION RD R/W
Block	
Liner	
Upstream Stationing	229 + 11.8
Downstream Stationing	226 + 26.69
Month / Year Installed	00 / 1891
Number of Laterals	0
Gravity or Force Main	GR
Comments	
Number of Wves	0

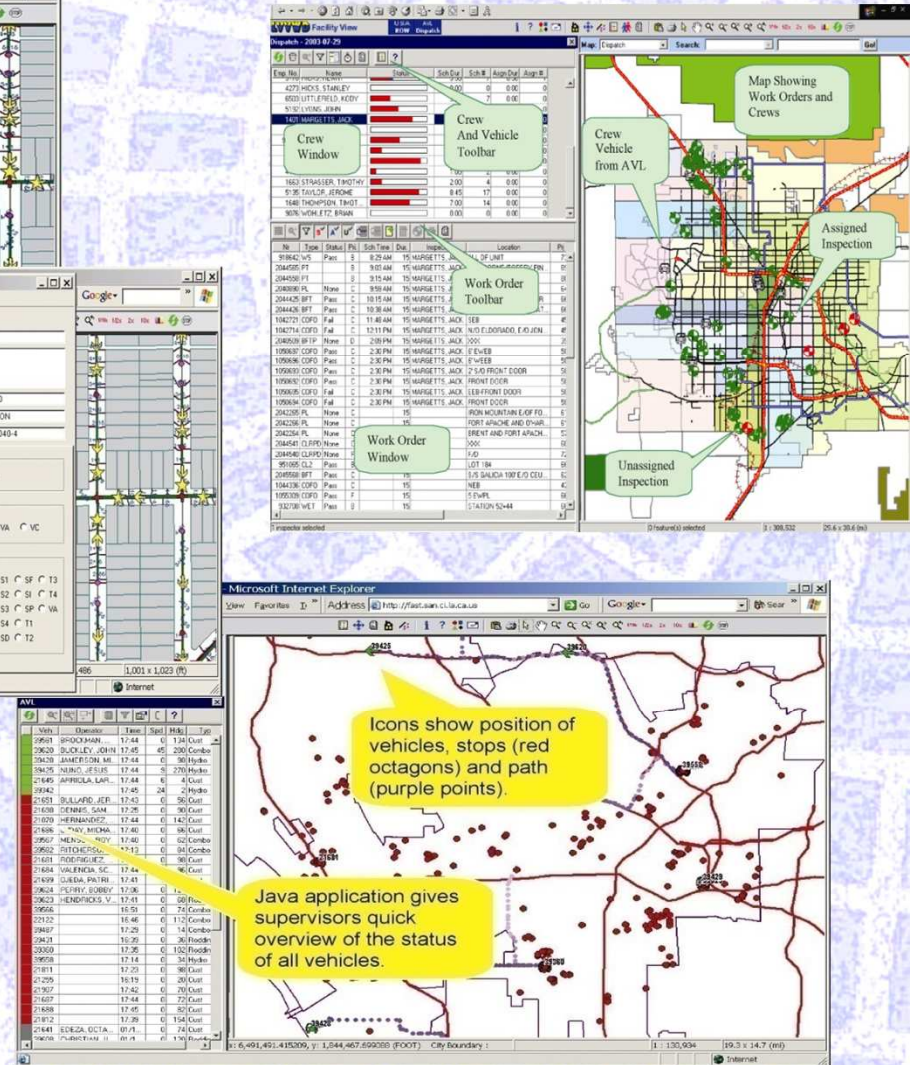
☒ Park Trees (Depart
☐ Selected Trees
☐ All Trees
☐ BSS Access Ramps
☐ Access Ramps (96-
☐ Landmarks
☐ Historical Landmark
☐ Revocable Permits
☐ SCIGN Sites
☐ Survey Benchmarks
☐ Control Line Monumr
☐ DOI Control
☐ Bridges and Structu
☐ Trees (Bureau of St
☐ Fire Hydrants (DWF
☐ Street Lights
☐ Soil Boings
☐ SBC AGF
☐ GSD Building Book
☐ City Facilities
☐ Libraries
☐ First Care Panel Me
☐ ABI (American Busi
☒ Construction Activiti
☐ BSL Constructio
☐ Metro Lines
☐ Metro Lines Str
☐ Street Lighting I
☐ Accelerated Se
☐ Street Resurfac
☐ Proposed Tree

Parcels (Details) : APN: 5171015900-PIN: 124-5A21.1 'Sewer Pipes' selected 1 : 1,000 488 x 447 (ft)



ARTESIA EXTENSION TRUNK	
(ID)	2168
Description	ARTESIA EXTENSION TR
<input checked="" type="checkbox"/> Geometry	
Start Node	
End Node	
<input checked="" type="checkbox"/> Modeling	
From Invert	56.020
To Invert	56.280
Length	242.000
Diameter	18.000
Coefficient	
Parallel	
<input checked="" type="checkbox"/> Information	
Type	0: Gravity Main
Installation Year	
Retirement Year	

Maintenance Management System



Safety & Training



OPERATION AND MAINTENANCE OF WASTEWATER COLLECTION SYSTEMS

A FIELD STUDY TRAINING PROGRAM

VOLUME I



• U.S. Environmental Protection Agency
• Office of Water Programs



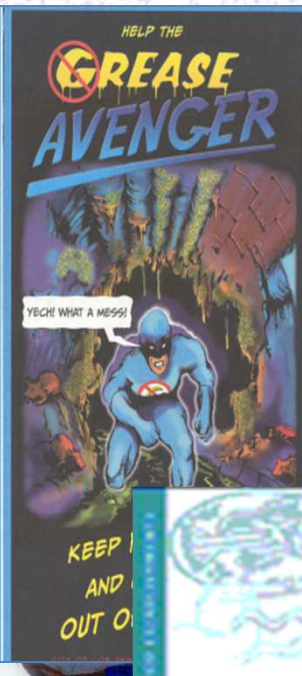
Overflow Emergency Response




Collection System Maintenance



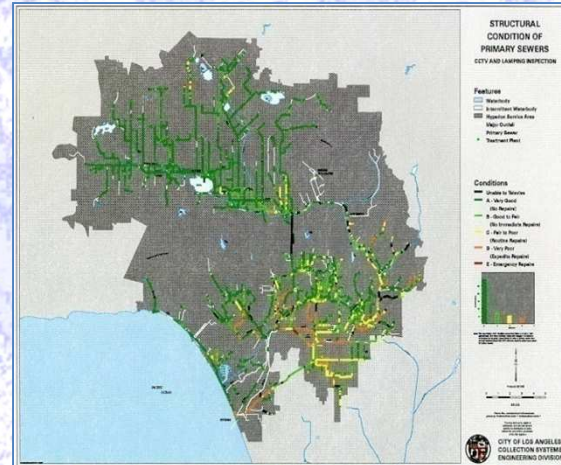
Source Control



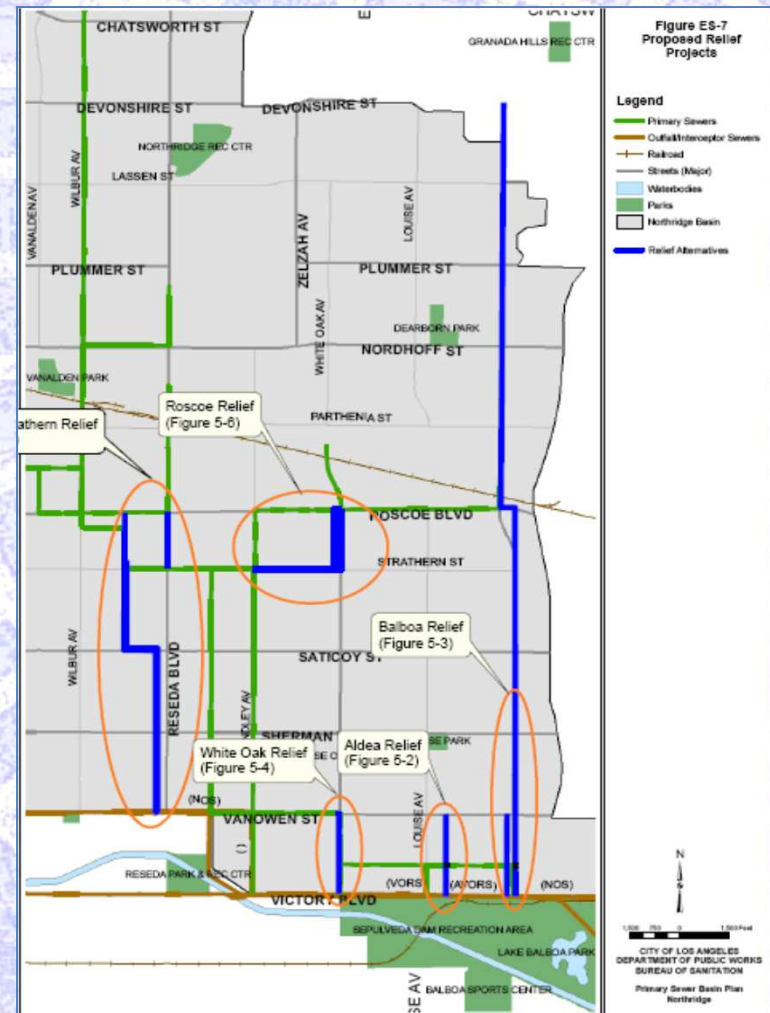
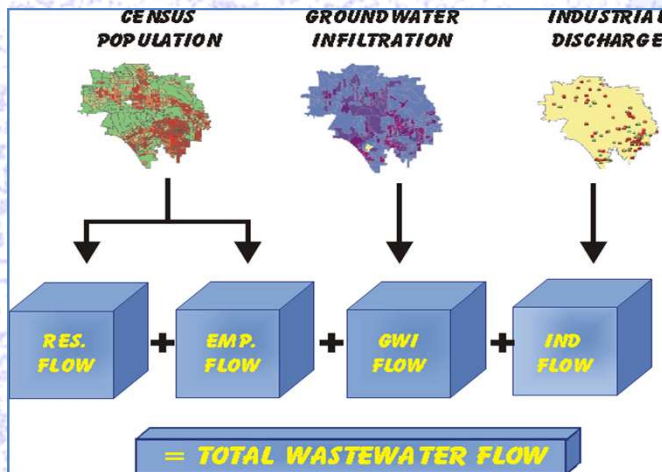
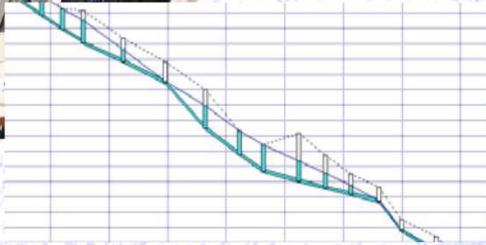
Structural Condition Assessment & Evaluation



The collage consists of four images arranged in a 2x2 grid. The top-left image shows a close-up of a concrete crack in a pavement surface. The top-right image shows a computer monitor displaying a 3D model of a bridge structure, likely used for finite element analysis. The bottom-left image shows a close-up of a concrete surface showing signs of deterioration, including cracking and discoloration. The bottom-right image shows a close-up of a concrete surface showing signs of deterioration, including cracking and discoloration.



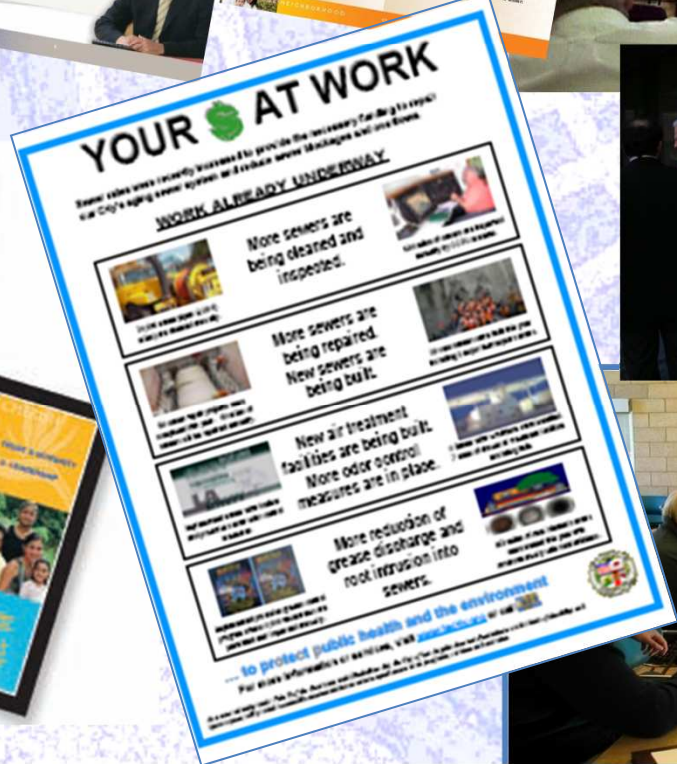
Hydraulic Capacity Assessment, Evaluation and Assurance



Standard Design, Construction & Inspection

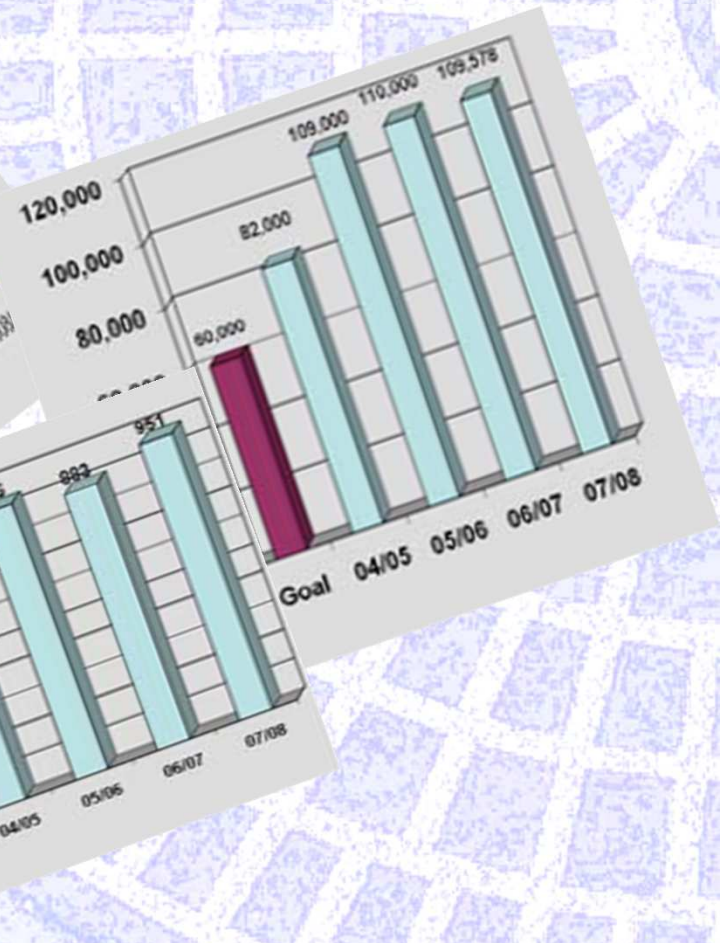
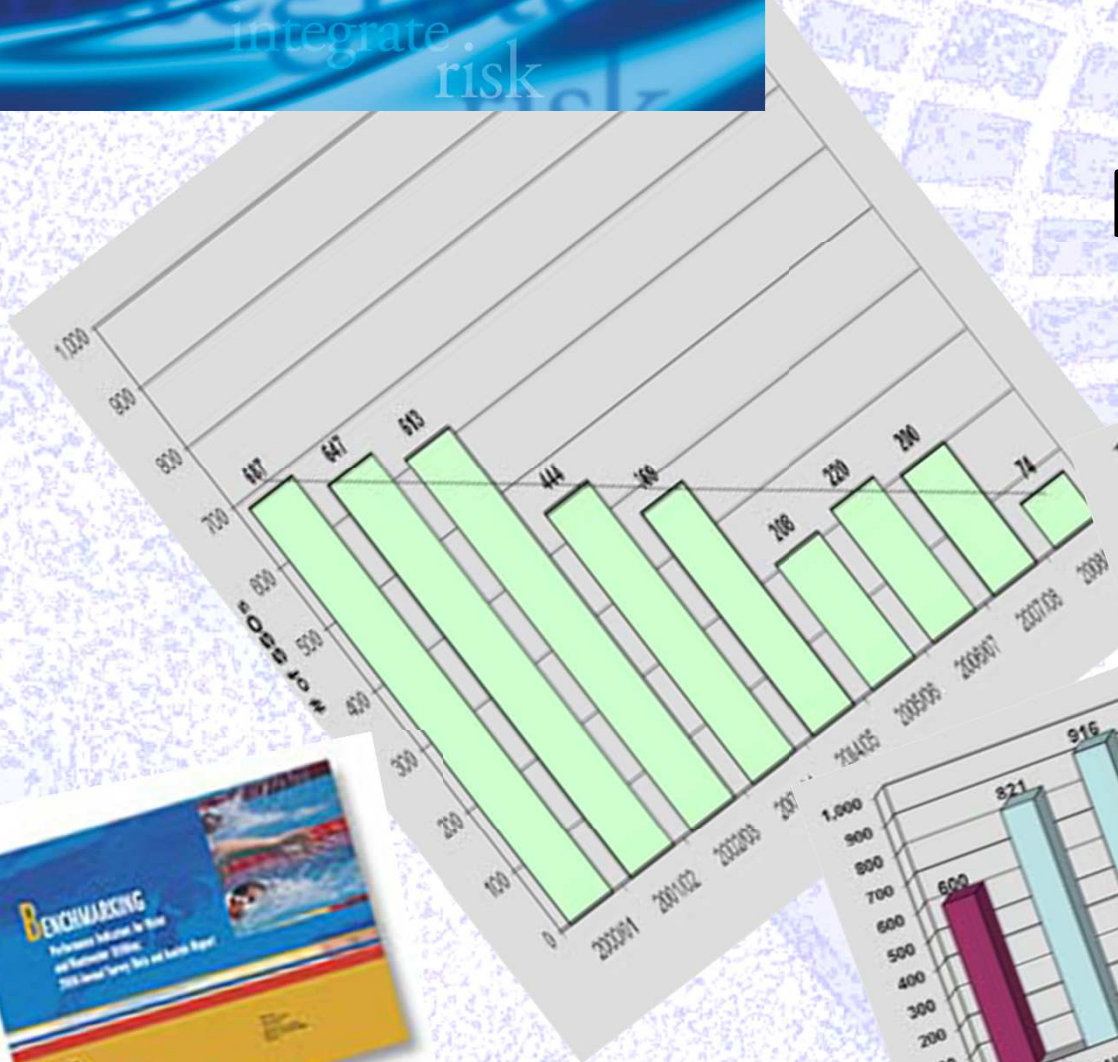


Communication & Outreach

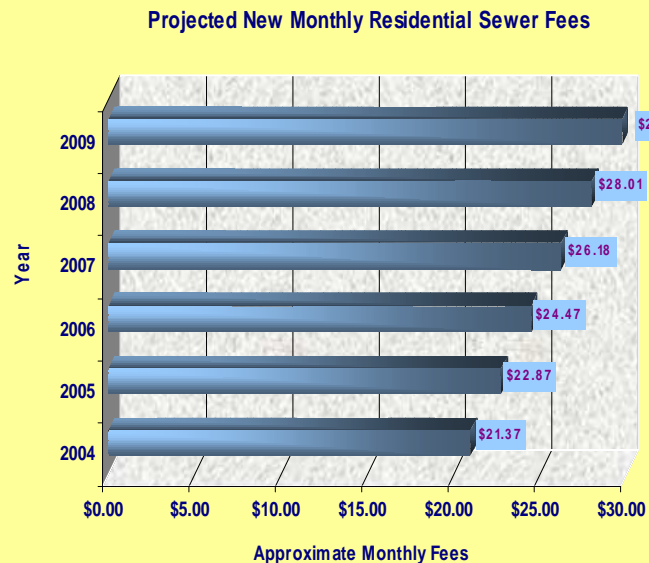
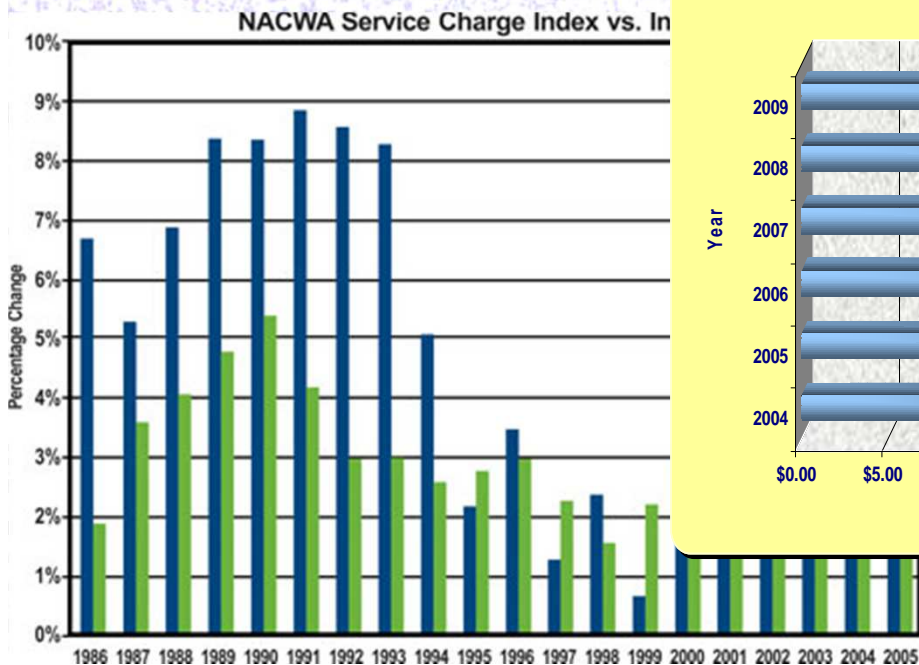
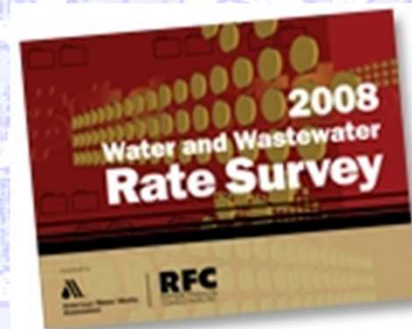
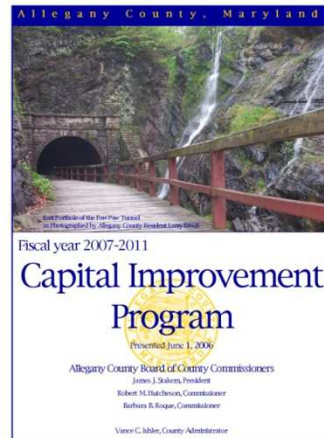




Monitoring, Measurement & Program Modifications



Adequate Funding



cleanwater
central

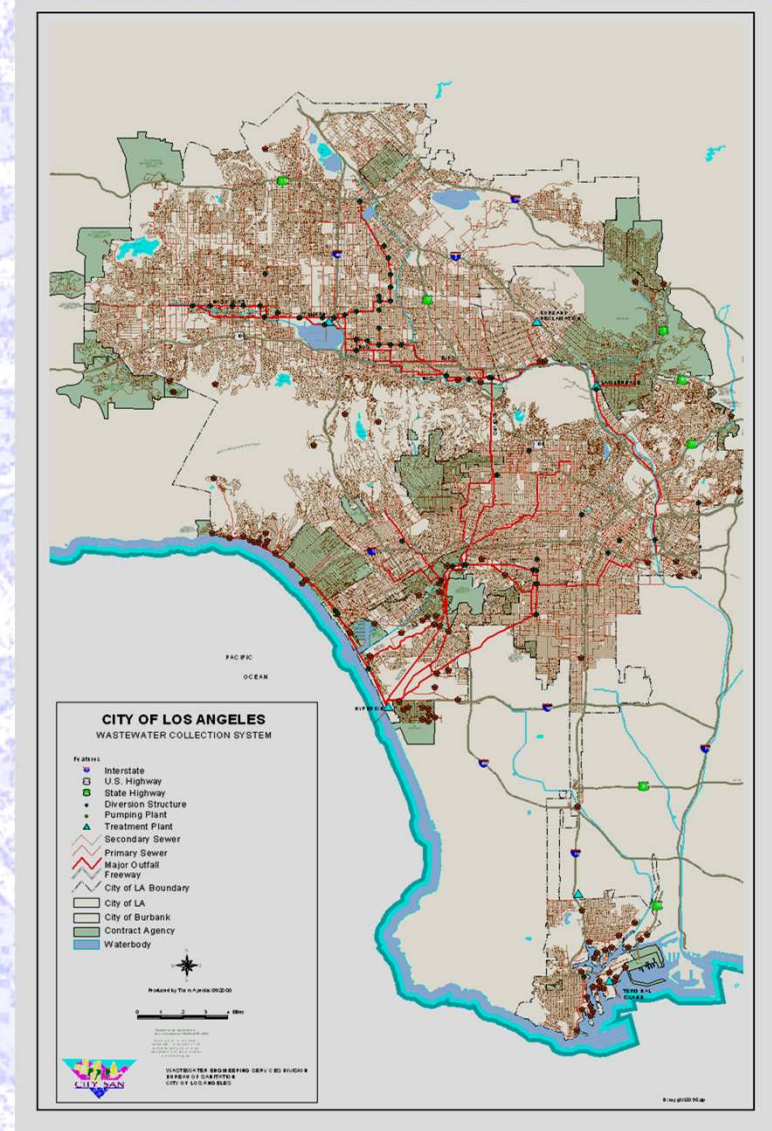


LA's Experience



City of Los Angeles Wastewater System

- Complex system
- Serves > 4 million people
- Service area >600 square miles
- 6,700 miles
- 140,000 maintenance holes
- 47 wastewater pumping plants
- Conveys 450 MGD average daily flow



Sewer Maintenance

Minimum Performance Measures

- Clean 60,000 pipes annually (~2,600 miles).
- Inspect system from surface bi-annually.
- Focus on hotspots and adjust frequency of cleaning.
- Apply chemicals for roots control to a minimum of 150 miles per year.



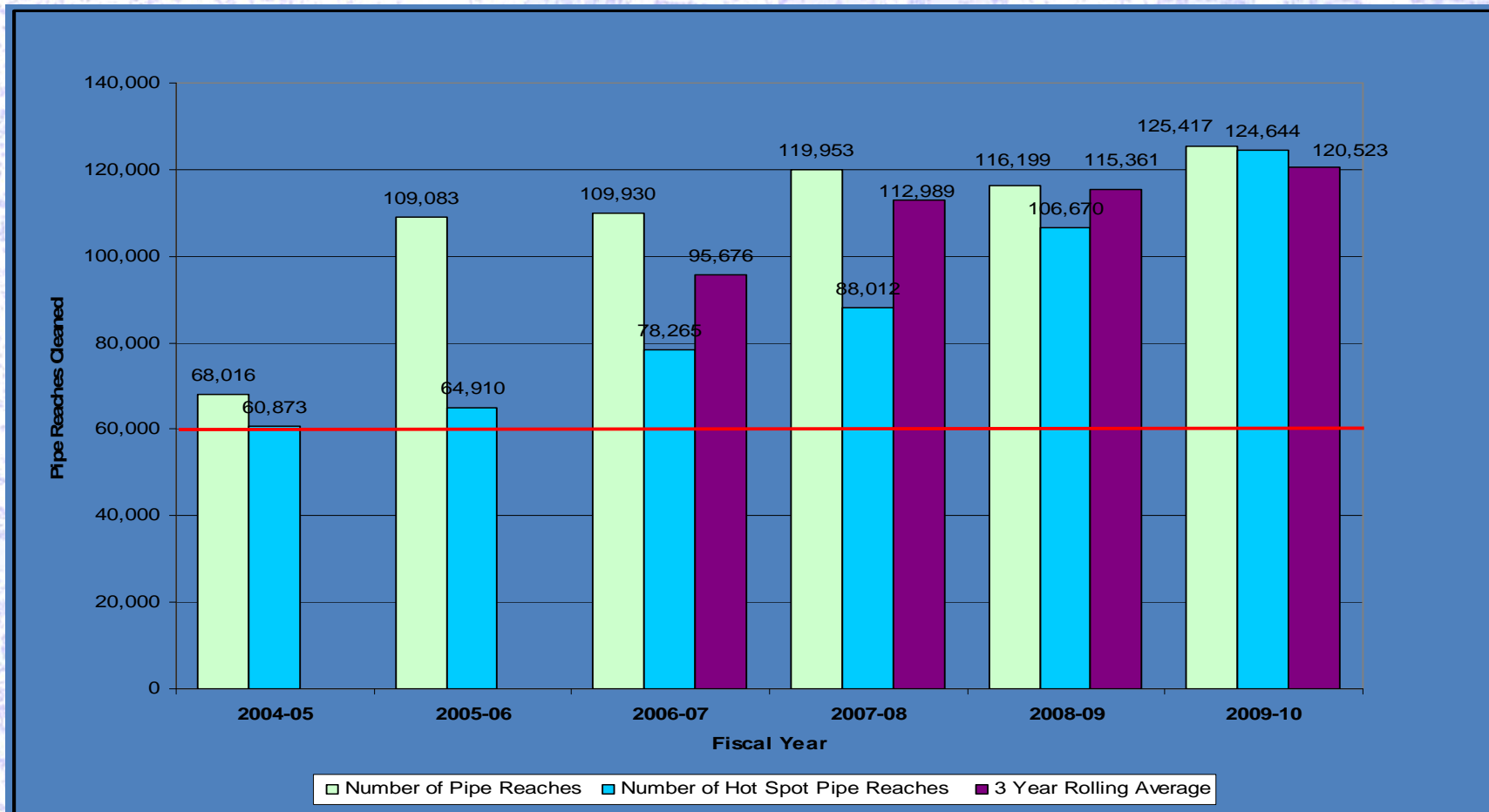
Sewer Condition Assessment and Renewal

Minimum Performance Measures

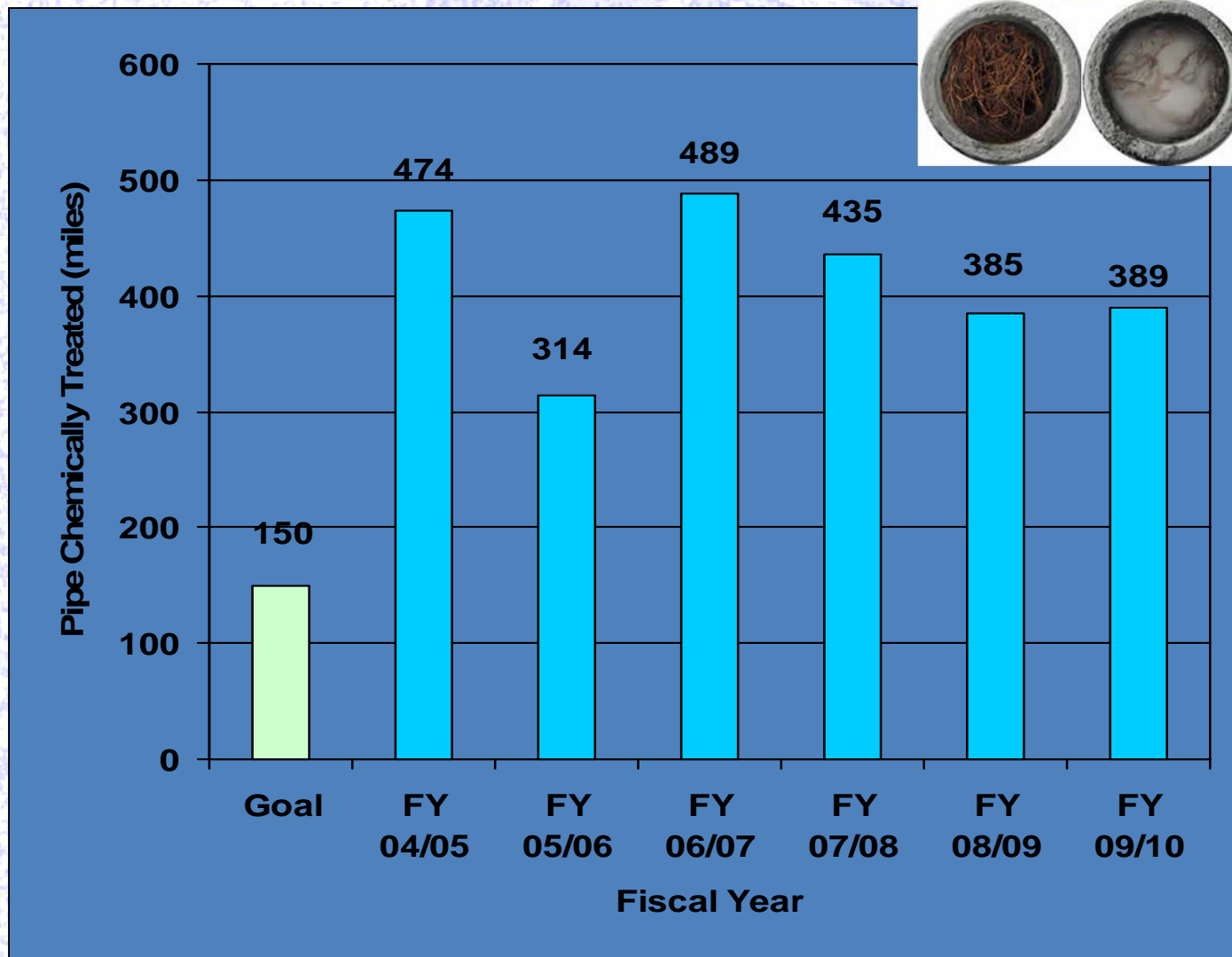
- CCTV and assess 600 miles (10% of system) annually.
- Focus on sewers not previously inspected or were inspected 5 years before entry (First-time assessment).
- Renew 60 miles per year.



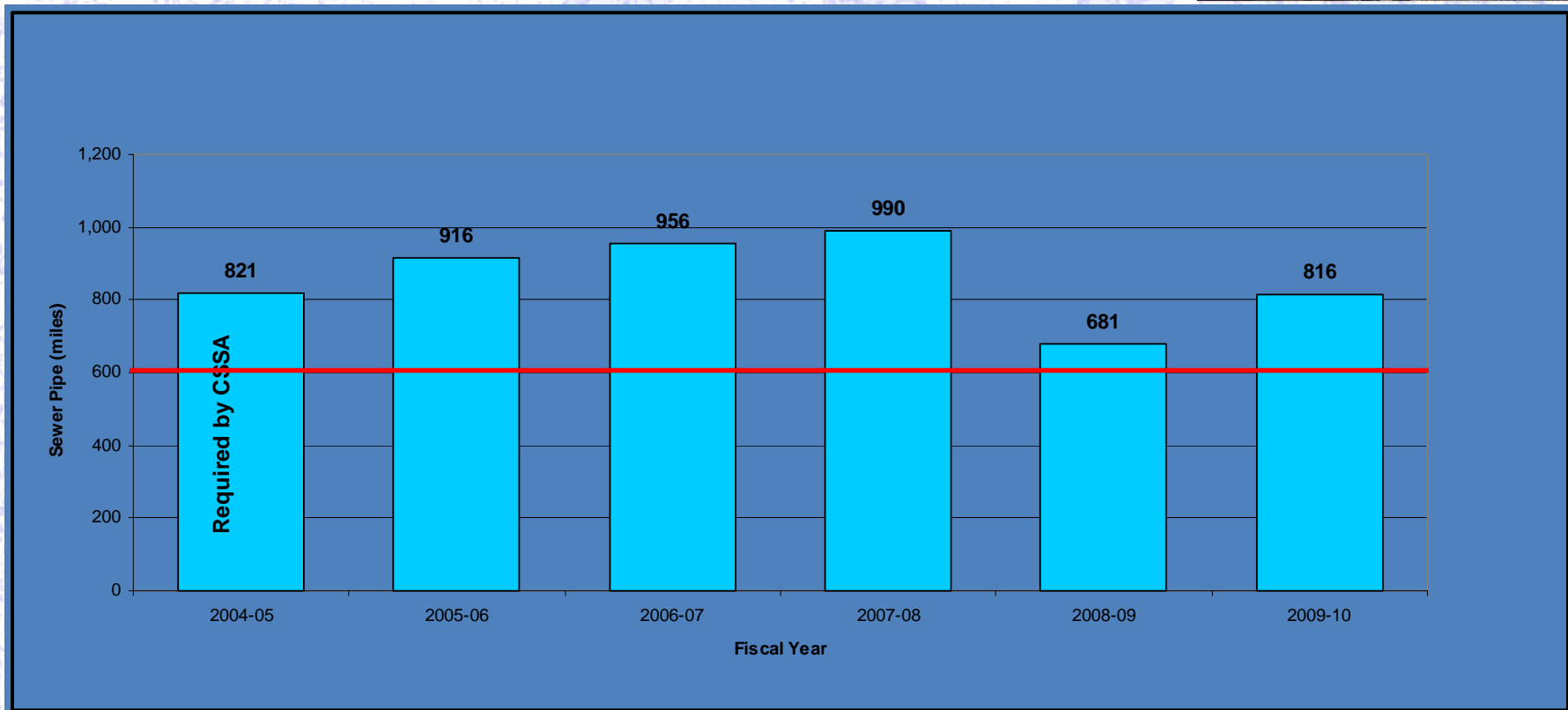
Sewer Cleaning



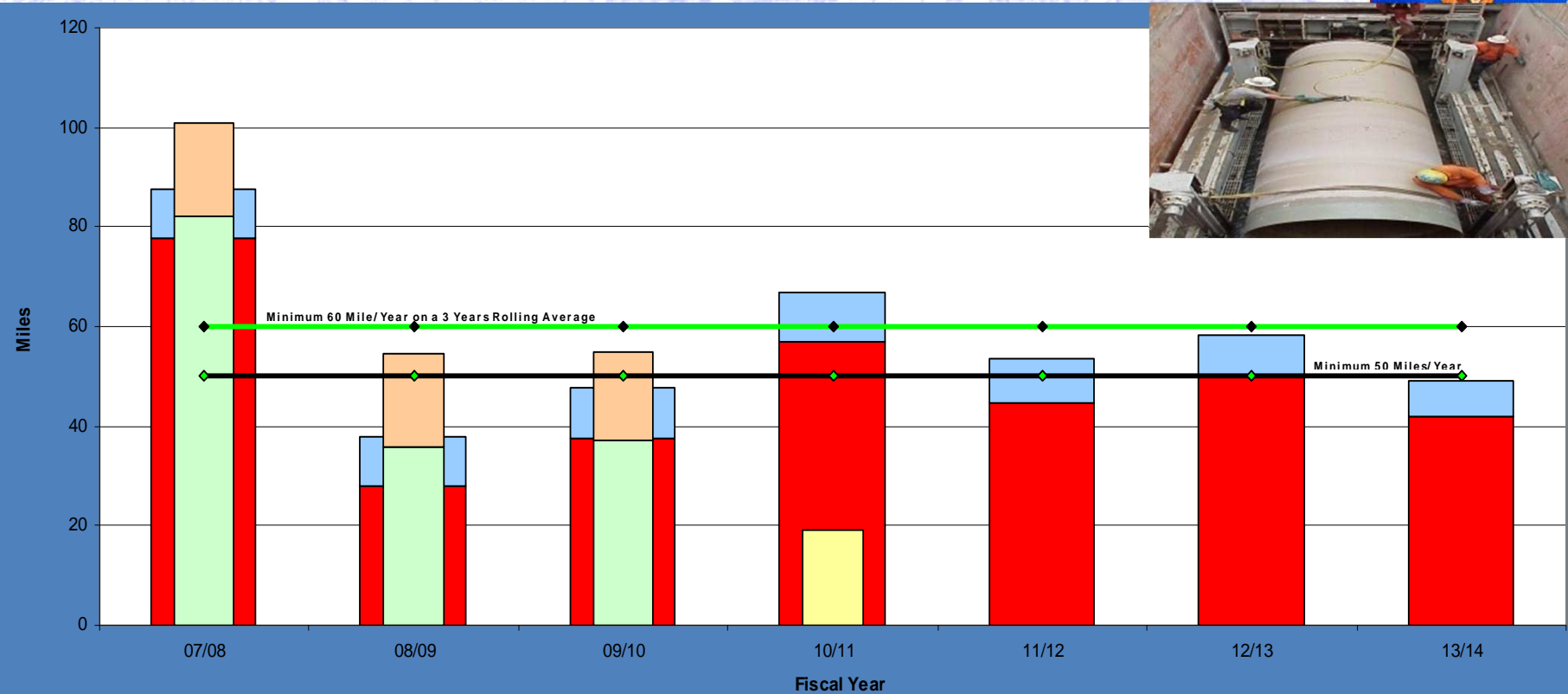
Sewer Root Control



Sewer Condition Assessment

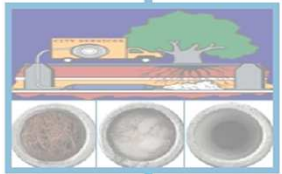


Sewer Renewal



- Total Anticipated Reach Length for ESRP Work (Miles)
- Total Planned Reach Length for CIP Projects (Miles)
- Total Constructed Reach Length for Completed ESRP Work (Miles)
- Total Constructed Reach Length for CIP Projects Under Construction (Miles)
- Total Constructed Reach Length for Completed CIP Projects (Miles)

Focusing the Resources



Basin Group	Basins	Total SSOs ⁽¹⁾	% of Total SSOs	% of Total Miles	Basin Group Spill Factor
1	1-20	757	24.8%	10.5%	2.36
2	21-50	792	25.9%	13.7%	1.89
3	51-75	371	12.1%	8.5%	1.43
4	75-100	394	12.9%	12.7%	1.02
Remaining	101 +	741	24.3%	54.6%	0.44
Grand Total		3,055	100.0%	100.0%	1.00

Pipe classes with highest SSO Risk

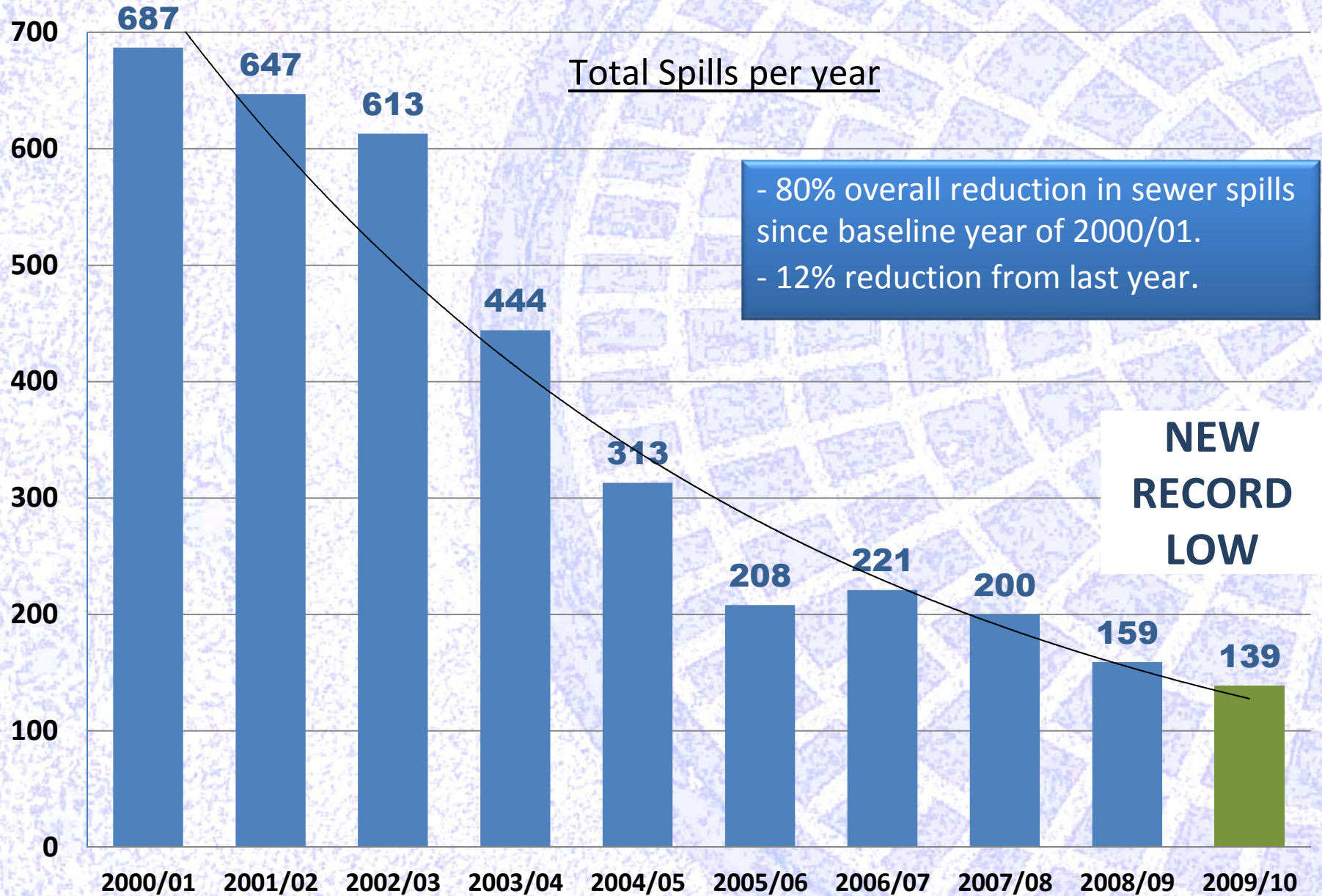
Pre-1955 age classes

Concrete & Pre-1920 VCP pipes

6-inch and 8-inch pipe classes

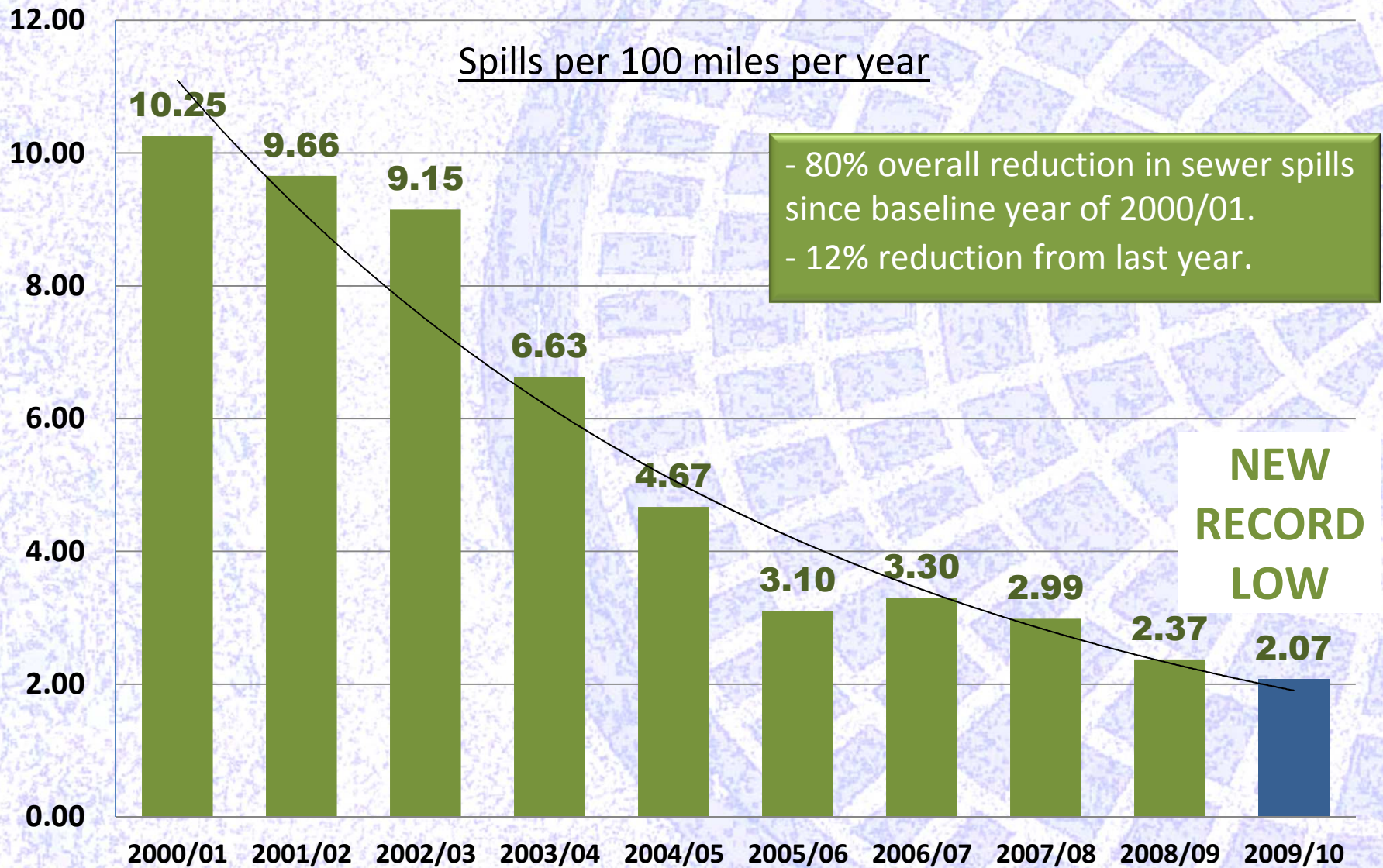
- 63% of SSOs addressed in 33% of miles in Basin Groups 1-3
- 76% of SSOs addressed in 45% of miles in Basin Groups 1-4

City of Los Angeles - Sanitary Sewer Spill Reduction



As of 7/1/2010

City of Los Angeles - Sanitary Sewer Spill Reduction



TAKEAWAYS

- Analyze system performance and attributes.
- Identify the “worst actors.”
- Prioritize/implement efforts to address “worst actors”.
- Integrate maintenance, inspection, planning and capital program.
- Conduct systematic cleaning.
- Conduct rapid assessment (visual inspection).
- Implement FOG and Root control programs.
- Assess about 10% of system by CCTV annually.
- Create emergency/expedited repair process.
- Renew minimum 1% of system annually.
- Track progress.
- Report and communicate.

TAKEAWAYS

Core Attribute	Significant Enhancements	Some Enhancements	Adequate	Good	Excellent
Core Attribute No. 1: System Inventory and Information Management					
Core Attribute No. 2: Maintenance Management System					
Core Attribute No. 3: Safety and Training					
Core Attribute No. 4: Overflow Emergency Response Plan					
Core Attribute No. 5: Collection System Maintenance					
Core Attribute No. 6: Source Control					
Core Attribute No. 7: Structural Condition Assessment and Evaluation					
Core Attribute No. 8: System Hydraulic Capacity Assessment, Evaluation, and Assurance					
Core Attribute No. 9: Standard Design, Construction, and Inspection					
Core Attribute No. 10: Communication and Outreach					
Core Attribute No. 11: Monitoring, Measurement, and Modification					
Core Attribute No. 12: Funding					

Quick Check
Where is your program?



TAKEAWAYS

- Do One Thing (DOT) every month
- 12 DOTs a year ... 12 Attributes
- Review your program for each attribute
- Prioritize them based on your program and needs
- Focus on one attribute a month ... 12 point system

What is your DOT?



