

SAWS Consent Degree SSO Reduction Program

Jeff Haby, P.E.

Director – Sewer System Improvements



April 8, 2014

Westside Creeks Oversight Committee Meeting



Overview

Provide an understanding of the Consent Decree

1. Westside Creeks Restoration Project

2. Consent Decree

- Objective
- Overview
- Compliance Requirements
- Projected Costs
- SSO Reduction Trend

3. Martinez Creek



UNITED STATES DISTRICT COURT
WESTERN DISTRICT OF TEXAS
SAN ANTONIO DIVISION

UNITED STATES OF AMERICA,	§	
	§	
and	§	Civil Action No.
	§	
STATE OF TEXAS,	§	
	§	
Plaintiffs,	§	
	§	
v.	§	
	§	
SAN ANTONIO WATER SYSTEM,	§	
	§	
Defendant.	§	

CONSENT DECREE




Westside Creeks Restoration Project


1. Apache Creek
2. Alazan Creek
3. San Pedro Creek
4. Martinez Creek



Westside Creeks Project Location

Westside creeks
alazan apache
martinez san pedro
Restoration Project


US Army Corps
of Engineers®
Fort Worth District


SAN ANTONIO
RIVER AUTHORITY
Member of Metropolitan Water

SAN ANTONIO CHANNEL IMPROVEMENT
PROJECT, GENERAL RE-EVALUATION
REPORT AND ENVIRONMENTAL
ASSESSMENT

*Westside Creeks Ecosystem Restoration,
San Antonio, Texas*

Draft Report
July 2013

CD Objective

Reduce Sanitary Sewer Overflows (SSOs)

- Implement and enhance existing programs to identify defects associated with an SSO
- SSO = Unauthorized discharges of raw sewage from municipal sanitary sewers Caused by:
 - Blockages (grease and debris)
 - Main breaks
 - Failures at Lift Stations
 - Capacity Constraints
 - Vandalism
 - Contractor Operations
- Clean Water Act

CD Overview:

- Time line
 - 2007-2013 Negotiations
 - July 23, 2013 Lodged
 - October 15, 2013 Entered
 - Term: 10-12 years
- Compliance Requirements
- Reporting

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CONSENT DECREE



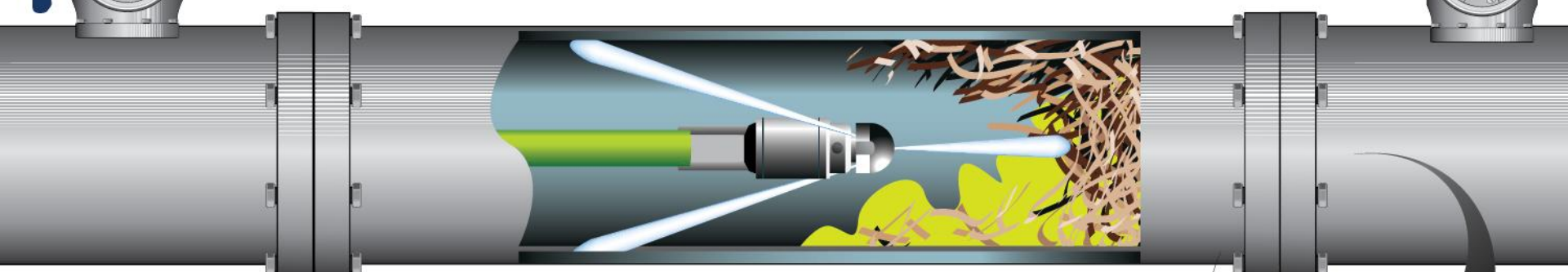
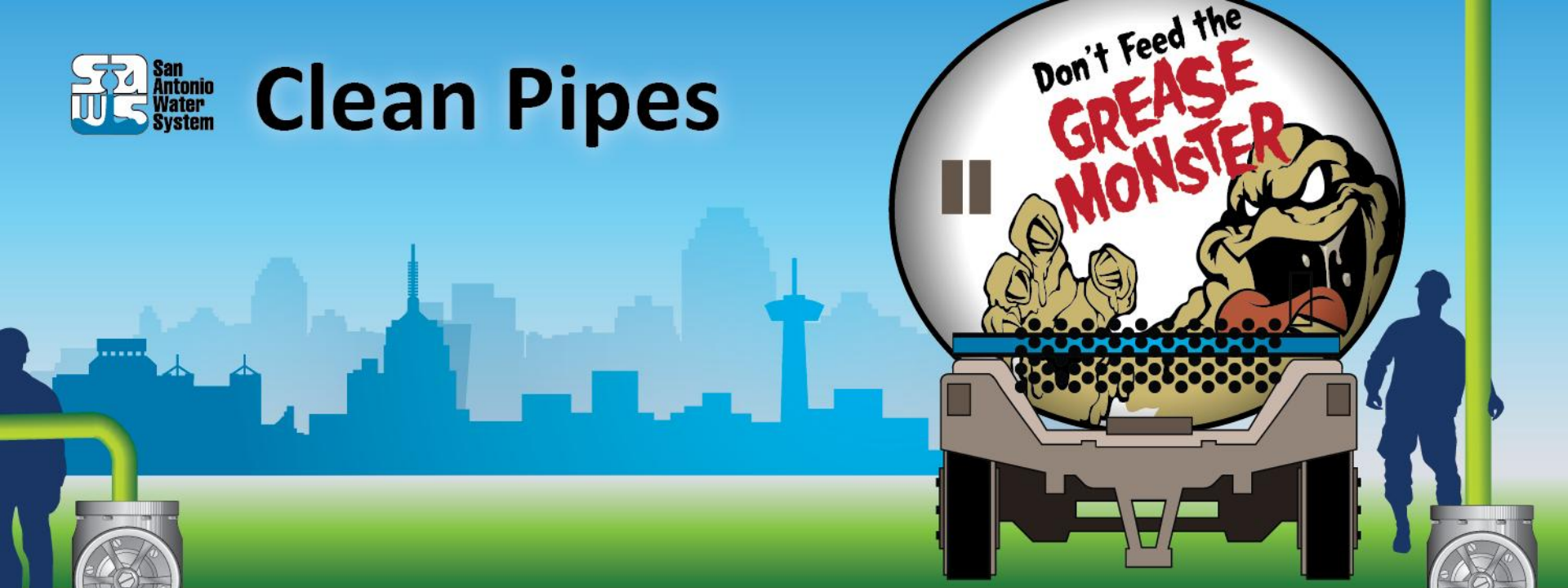
CD Overview

Compliance Requirements

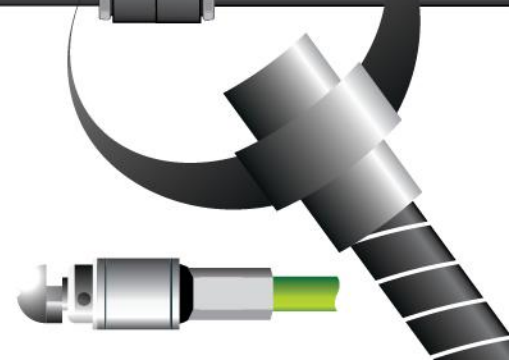
1. CMOM (Capacity, Management, Operation and Maintenance)
2. Early Action Program
3. Condition Assessment & Remedial Measures
4. Capacity Assessment & Remedial Measures
5. Lift Station Rehabilitation and Elimination Program
6. Force Main Assessment Program
7. Water Quality Program



Clean Pipes



Majority of sewer spills in San Antonio are caused by grease and debris.





Cleaning Schedules

CoTools

- Asset-based
- “Clean the right pipe at the right time”
- Pipes are cleaned within their “maintenance window”
- 1, 3, 6, 12, 24 and 60 Month Schedules
- Use Cleaning Optimization Program (CoTools) to manage scheduling

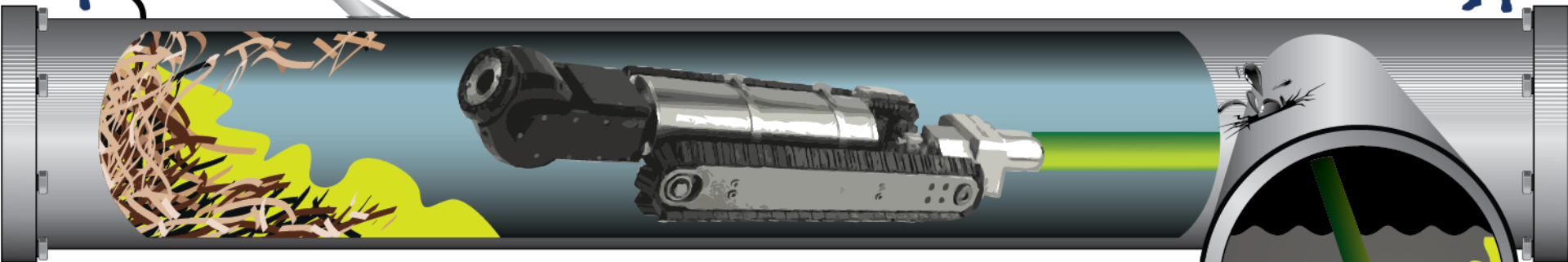
What we find...



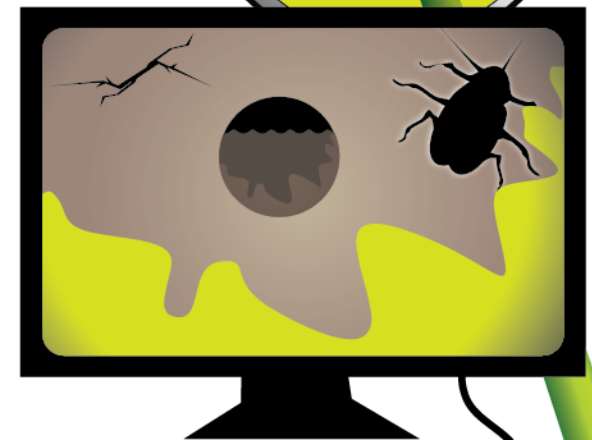


San Antonio Water System

Visual Inspection



All 5,200 miles of SAWS sewers will be examined over the next 4 to 10 years to determine condition.



Visual Inspection Requirements

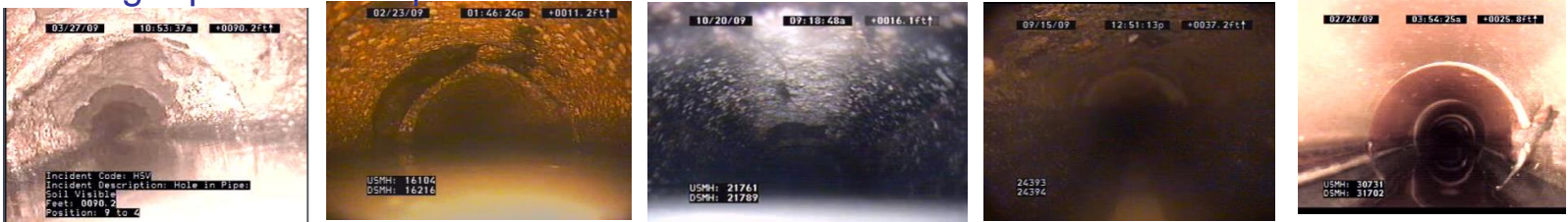
- Large Diameter \geq 24-inch:
 - Inspect over 4 years
 - Credit for Inspections performed since 2005
- Small Diameter $<$ 24-inch:
 - Over 4 year period
 - CCTV $>$ 40 year old clay and all concrete pipe
 - Pole Camera $>$ 30 $<$ 40 year old clay
 - Credit for pipe inspected since January 1, 2009
 - All other pipes over 10 year using SAWS selected visual techniques
- Manholes (98,000) over 10 years
- Force Main (~ 80 miles) over 10 years

Examples of Pipe Condition

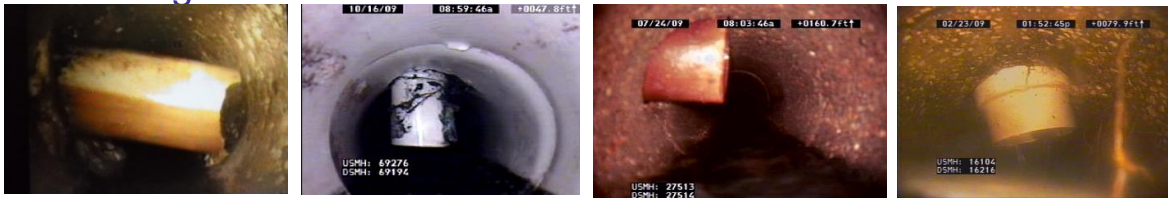
Collapsed Pipe



Missing Pipe/Hole in Pipe



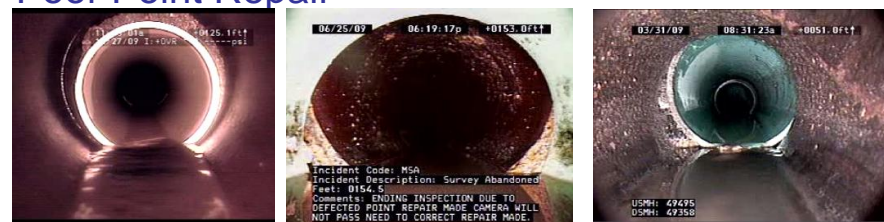
Protruding Lateral



Protruding Gasket



Poor Point Repair





Measure Capacity

Pipes that are too small for the flow may be upsized to manage identified capacity constraint(s).



Flow Monitoring Program

- Flow Meters (>200 flow meters)
- Rain Gauges
- Flow Monitoring Contracts to support
 - Model calibration
 - Inflow & Infiltration studies
 - Capacity Validation



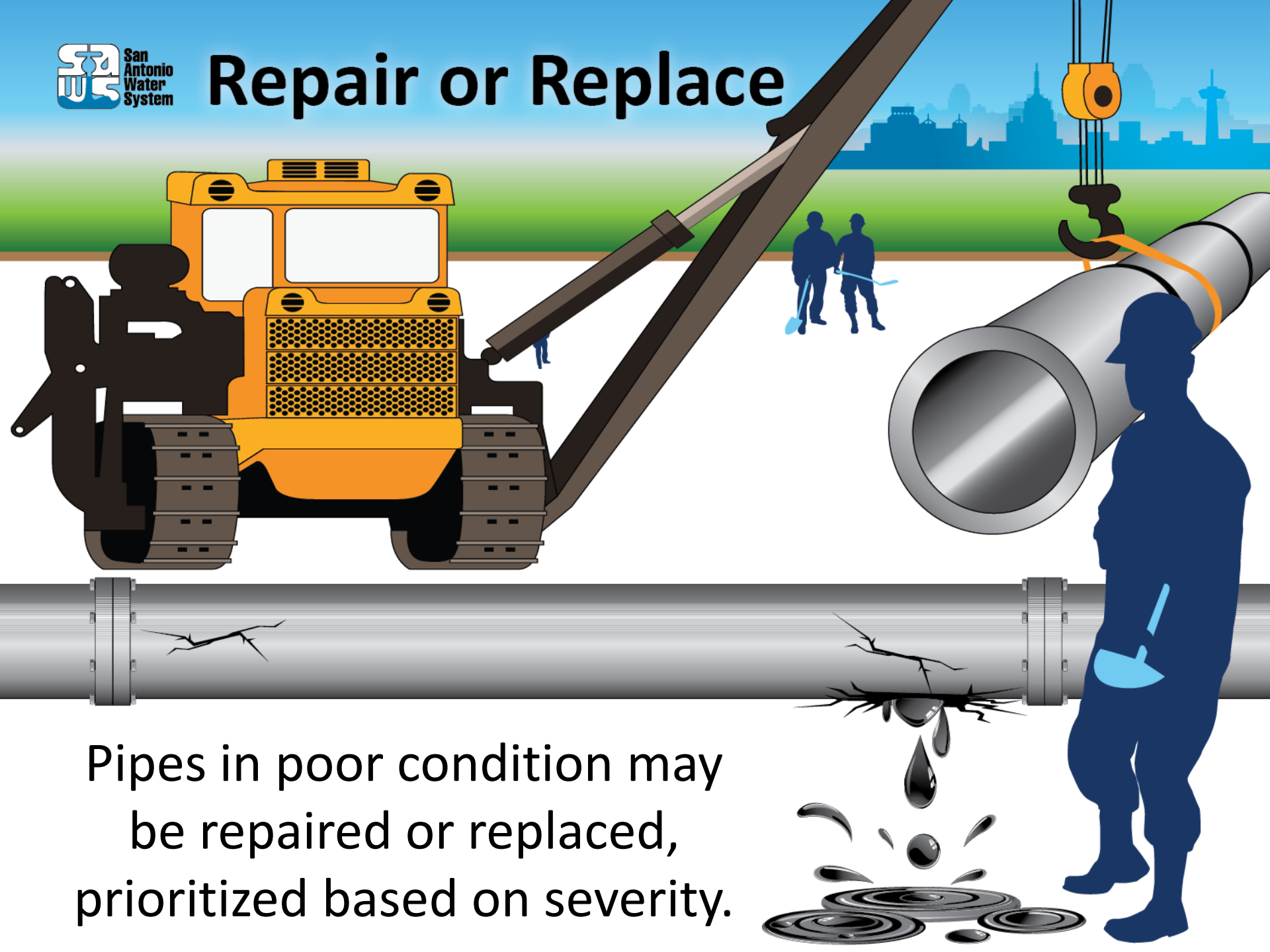
Condition & Capacity Assessment Programs

All assets will fall in one of three “buckets”

1. Maintenance
2. Monitor
3. Alternative Analysis



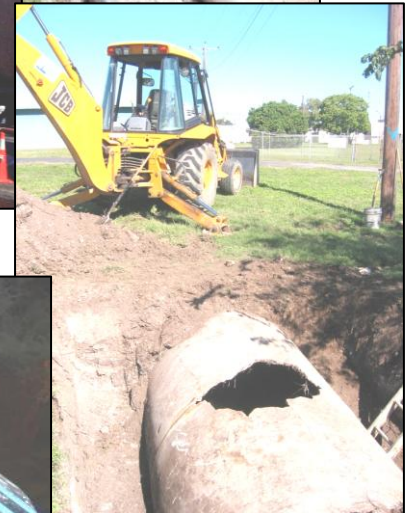
Repair or Replace



Pipes in poor condition may be repaired or replaced, prioritized based on severity.

Remedial Measures

- Early Action Phase I & II
- **Assessment Reports (4.5 years)**
- **Alternative Analysis (5.5 years)**
- SAWS D&C Team Work Orders
 - Point Repairs
 - Open Cut
 - Pipe Bursting
 - Pipe Patch
- Contracted Work Orders
 - Point Repairs
 - Open Cut
 - Pipe Bursting
 - Cured In Place Pipe (CIPP)
 - Slip-lining





Fix or Remove Lift Stations



Extra attention to pumps and equipment that move sewage uphill.

Water Quality Program Plan

- To determine in selected watersheds if water samples from storm water outfalls contain human presence and the collection of samples for *E. coli* measurements.
- The required watersheds are the Upper San Antonio, Salado, and Medio which are within SAWS service area.



Water Quality Program Plan

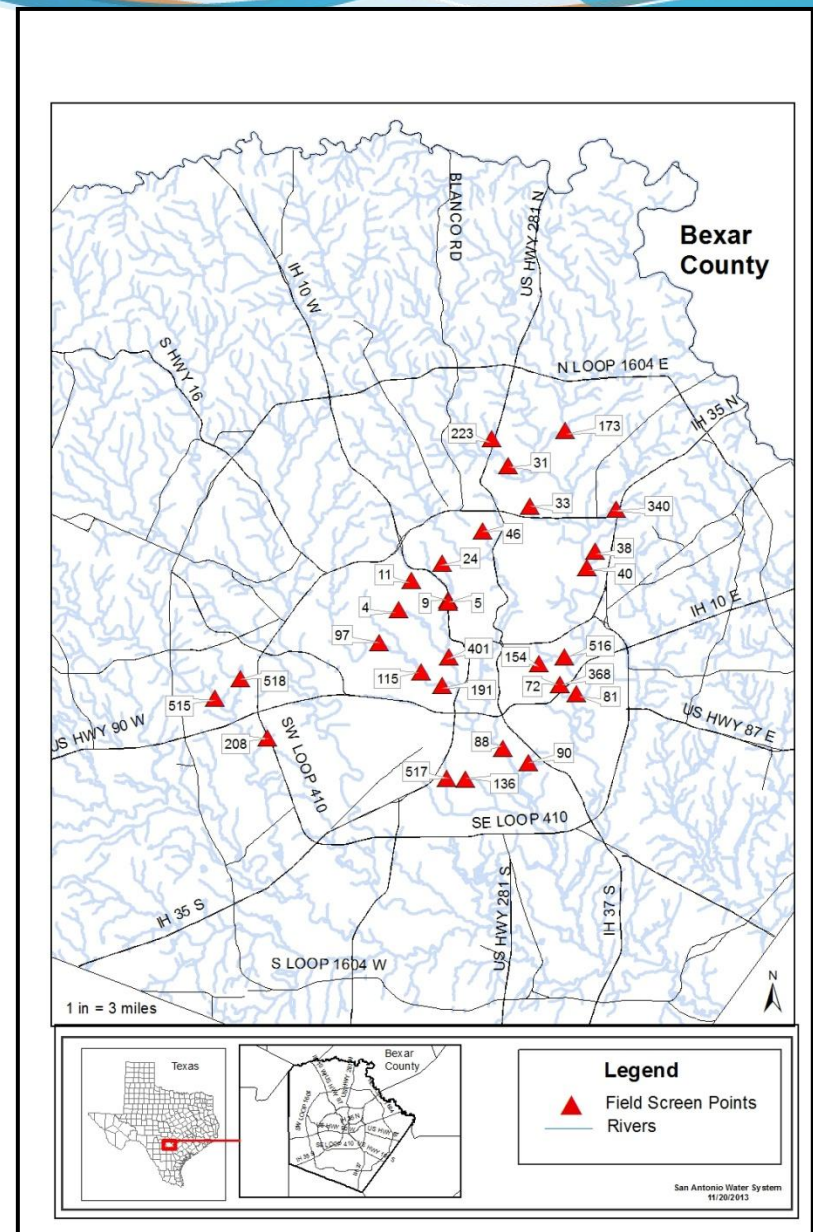
January 16, 2014



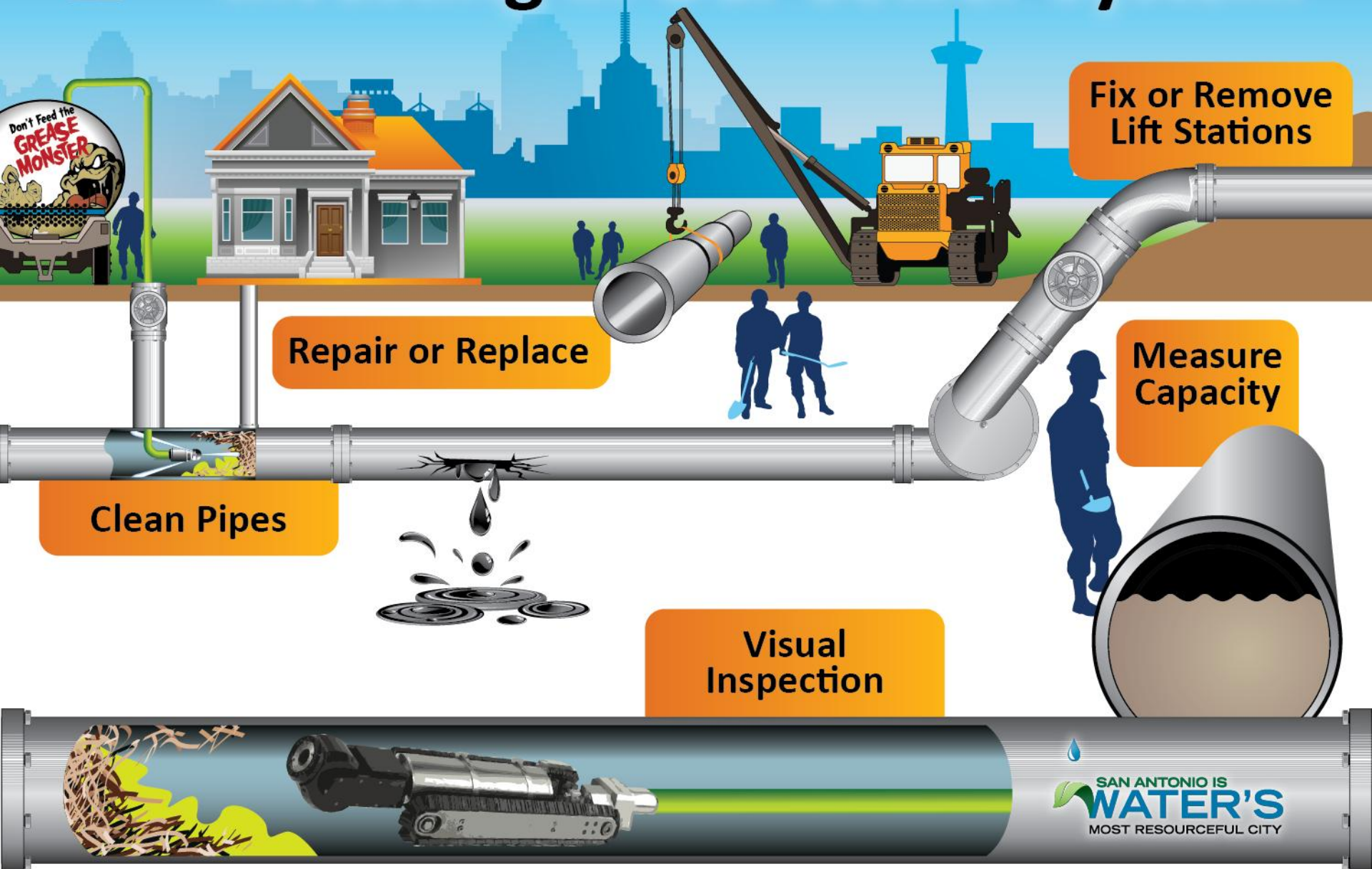
Sample Locations

Requirement:

- 25-30 storm water outfall locations
- 2 dry and 2 wet weather (first flush) samples
- 29 locations were selected



Investing in Our Sewer System

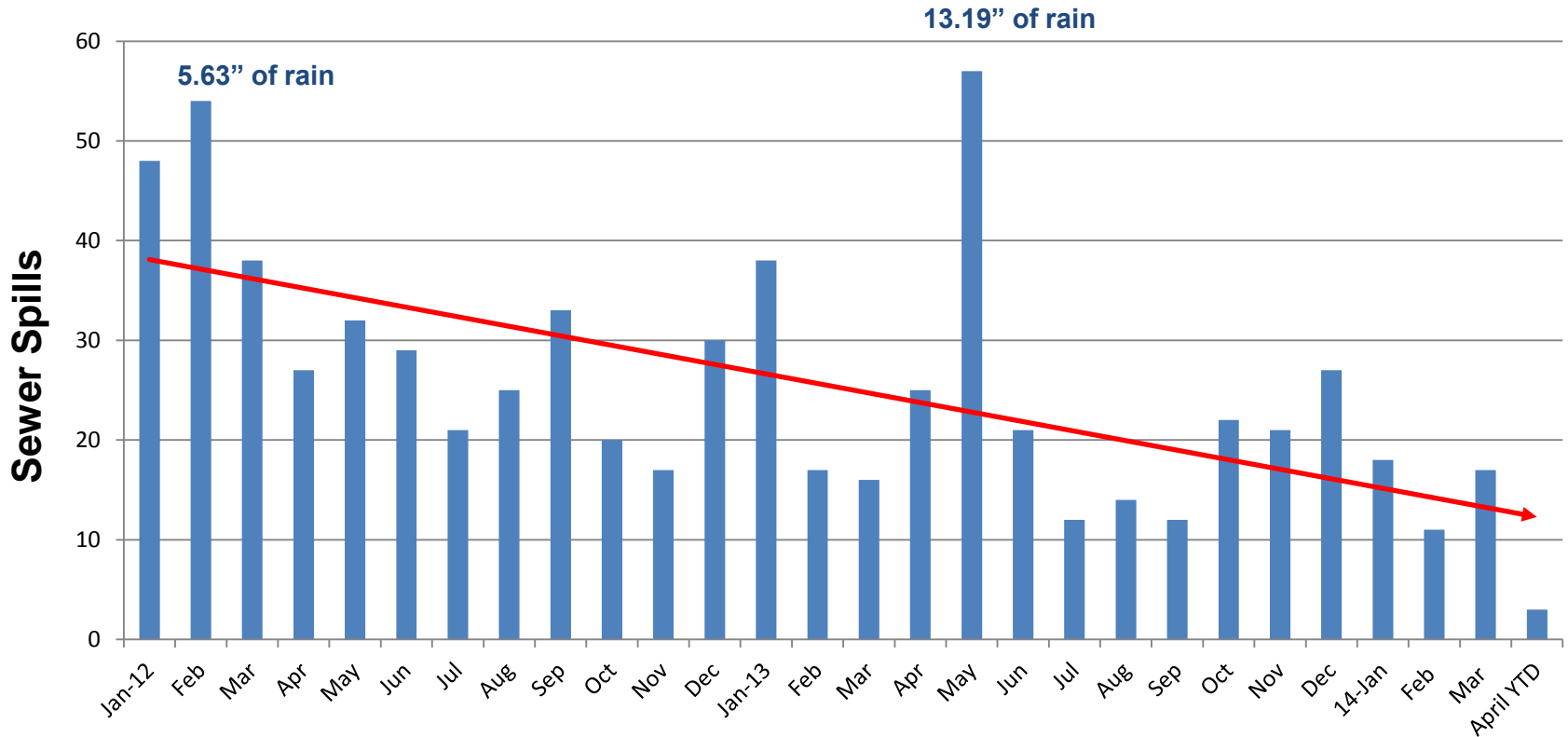


Projected Sewer System Investments

Projected Over 10 Yrs	Operating	Capital	Total
Investment After the Consent Decree	\$251.7 M	\$840.4 M	\$1.092 B
Historical Average Spending Level	\$148.0 M	\$452.0 M	\$600.0 M
Investment as a Result of the Consent Decree	\$ 103.7 M	\$ 388.4 M	\$492.1 M

Sewer Spills Reduced 2012-2014 YTD

Sewer Investments are Working

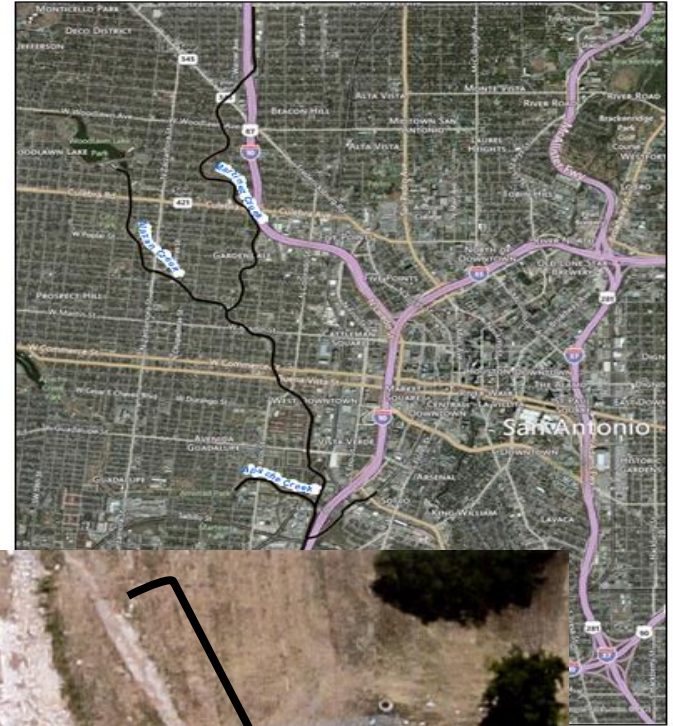


Consent Decree Summary

- The agreement with EPA is focused on reducing sewer spills and designed to be cost-effective
- It is a responsible investment that will protect our community and environment as well as improves service to our ratepayers

Martinez Creek Project

- Mains along the Creek
- System Assessment 4.5 Years
- Determine which “Bucket”
- Determine if Alternative Analysis
- Continue Collaboration with SARA



SAWS Consent Degree SSO Reduction Program

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April 8, 2014

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Cleaning

- SAWS 23 Line Cleaning Crews
- SAWS Clean >900 miles per year:
 - 4 single purpose flushing machines
 - 17 multi-purpose flushing/vacuum machines (combo)
- Contractor clean 600 miles per year



Laboratory Testing

Source Molecular Corporation (SMC)

- Selected through Request for Proposals (RFP) process
- One Human *Bacteriodales* marker using the qPCR method

SAWS Dos Rios Environmental Laboratory

- Accredited for enumeration of *E. coli* by Standard Methods (SM) 9223B-97.
- Employs the Colilert® defined substrate test, which incorporates specific non-coliform growth inhibitors and a selective enzymatic indicator to allow for detection and quantitation of *E. coli*.

Rationale for Selected Sample Locations

- Upstream of historically reported high bacteria levels >126 colony-forming units (CFUs)
- 2 Main Bacterial Related Resources:
 1. Clean Rivers Program Data
Clean Rivers Program data 1996–2012 and the Texas Commission on Environmental Quality (TCEQ) programs, Total Maximum Daily Load (TMDL) and Watershed Protection Plan (WPP) data.
 2. “Final BMP Assessment Report Update”
Authored by James Miertschin & Associates, Inc. and prepared for SARA. This report provides data and information supporting the implementation of control measures to address the TMDL bacteria impairments in the Salado Creek (Segment 1910) and the Upper San Antonio River (Segment 1911).

Water Quality Program Report

- Within 6 months of completion of sampling submit report for review and comment
- Rank the outfalls based upon the sampling results

CCTV

- SAWS 7 Foreman-led crews
- SAWS >250 miles per year
- SAWS 9 Vans equipped with main camera
 - 5 equipped with lateral camera
 - 2 equipped with sonar
 - Pipe Assessment Software
- Contractor 300 miles per year

